MSI
MICRO-STAR INTERNATIONAL

P965 Neo Series

MS-7235 (V1.X) Mainboard

G52-72351X1

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Revision History

Revision	Revision History	Date
V1.0	First release	July 2006

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

- Visit the MSI website for FAQ, technical guide, BIOS updates, driver updates, and other information: ***http://www.msi.com.tw/program/service/faq/faq/esc_faq_list.php***
- Contact our technical staff at: ***http://support.msi.com.tw***

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - † The power cord or plug is damaged.
    - † Liquid has penetrated into the equipment.
    - † The equipment has been exposed to moisture.
    - † The equipment has not work well or you can not get it work according to User's Manual.
    - † The equipment has dropped and damaged.
    - † The equipment has obvious sign of breakage.
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60^0C (140^0F), IT MAY DAMAGE THE EQUIPMENT.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

警告使用者:
這是甲類的資訊產品，在居住的環境中使用時，可能會造成無線電干擾，在這種情況下，使用者會被要求採取某些適當的對策。

廢電池請回收

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed below.

CE N1996

- † Reorient or relocate the receiving antenna.
- † Increase the separation between the equipment and receiver.
- † Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- † Consult the dealer or an experienced radio/television technician for help.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

FC **Micro-Star International**
MS-7235

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

WEEE (Waste Electrical and Electronic Equipment) Statement

ENGLISH

To protect the global environment and as an environmentalist, MSI must remind you that...

Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, which takes effect on August 13, 2005, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life. MSI will comply with the product take back requirements at the end of life of MSI-branded products that are sold into the EU. You can return these products to local collection points.

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

Gemäß der Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte dürfen Elektro- und Elektronik-Altgeräte nicht mehr als kommunale Abfälle entsorgt werden. MSI hat europaweit verschiedene Sammel- und Recyclingunternehmen beauftragt, die in die Europäische Union in Verkehr gebrachten Produkte, am Ende seines Lebenszyklus zurückzunehmen. Bitte entsorgen Sie dieses Produkt zum gegebenen Zeitpunkt ausschliesslich an einer lokalen Altgerätesammelstelle in Ihrer Nähe.

FRANÇAIS

En tant qu'écologiste et afin de protéger l'environnement, MSI tient à rappeler ceci...

Au sujet de la directive européenne (EU) relative aux déchets des équipement électriques et électroniques, directive 2002/96/EC, prenant effet le 13 août 2005, que les produits électriques et électroniques ne peuvent être déposés dans les décharges ou tout simplement mis à la poubelle. Les fabricants de ces équipements seront obligés de récupérer certains produits en fin de vie. MSI prendra en compte cette exigence relative au retour des produits en fin de vie au sein de la communauté européenne. Par conséquent vous pouvez retourner localement ces matériels dans les points de collecte.

РУССКИЙ

Компания MSI предпринимает активные действия по защите окружающей среды, поэтому напоминаем вам, что....

В соответствии с директивой Европейского Союза (ЕС) по предотвращению загрязнения окружающей среды использованным электрическим и электронным оборудованием (директива WEEE 2002/96/EC), вступающей в силу 13 августа 2005 года, изделия, относящиеся к электрическому и электронному оборудованию, не могут рассматриваться как бытовой мусор, поэтому производители вышеперечисленного электронного оборудования обязаны принимать его для переработки по окончании срока службы. MSI обязуется соблюдать требования по приему продукции, проданной под маркой MSI на территории ЕС, в переработку по окончании срока службы. Вы можете вернуть эти изделия в специализированные пункты приема.

ESPAÑOL

MSI como empresa comprometida con la protección del medio ambiente, recomienda:
Bajo la directiva 2002/96/EC de la Unión Europea en materia de desechos y/o equipos electrónicos, con fecha de rigor desde el 13 de agosto de 2005, los productos clasificados como "eléctricos y equipos electrónicos" no pueden ser depositados en los contenedores habituales de su municipio, los fabricantes de equipos electrónicos, están obligados a hacerse cargo de dichos productos al termino de su período de vida. MSI estará comprometido con los términos de recogida de sus productos vendidos en la Unión Europea al final de su periodo de vida. Usted debe depositar estos productos en el punto limpio establecido por el ayuntamiento de su localidad o entregar a una empresa autorizada para la recogida de estos residuos.

NEDERLANDS

Om het milieu te beschermen, wil MSI u eraan herinneren dat....
De richtlijn van de Europese Unie (EU) met betrekking tot Vervuiling van Electrische en Electronische producten (2002/96/EC), die op 13 Augustus 2005 in zal gaan kunnen niet meer beschouwd worden als vervuiling.
Fabrikanten van dit soort producten worden verplicht om producten retour te nemen aan het eind van hun levenscyclus. MSI zal overeenkomstig de richtlijn handelen voor de producten die de merknaam MSI dragen en verkocht zijn in de EU. Deze goederen kunnen geretourneerd worden op lokale inzamelingspunten.

SRPSKI

Da bi zaštitili prirodnu sredinu, i kao preduzeće koje vodi računa o okolini i prirodnoj sredini, MSI mora da vas podesti da...
Po Direktivi Evropske unije ("EU") o odbačenoj ekektronskoj i električnoj opremi, Direktiva 2002/96/EC, koja stupa na snagu od 13. Avgusta 2005, proizvodi koji spadaju pod "elektronsku i električnu opremu" ne mogu više biti odbačeni kao običan otpad i proizvođači ove opreme biće prinuđeni da uzmu natrag ove proizvode na kraju njihovog uobičajenog veka trajanja. MSI će poštovati zahtev o preuzimanju ovakvih proizvoda kojima je istekao vek trajanja, koji imaju MSI oznaku i koji su prodati u EU. Ove proizvode možete vratiti na lokalnim mestima za prikupljanje.

POLSKI

Aby chronić nasze środowisko naturalne oraz jako firma dbająca o ekologię, MSI przypomina, że...
Zgodnie z Dyrektywą Unii Europejskiej ("UE") dotyczącą odpadów produktów elektrycznych i elektronicznych (Dyrektywa 2002/96/EC), która wchodzi w życie 13 sierpnia 2005, tzw. "produkty oraz wyposażenie elektryczne i elektroniczne " nie mogą być traktowane jako śmieci komunalne, tak więc producenci tych produktów będą zobowiązani do odbierania ich w momencie gdy produkt jest wycofywany z użycia. MSI wypełni wymagania UE, przyjmując produkty (sprzedawane na terenie Unii Europejskiej) wycofywane z użycia. Produkty MSI będzie można zwracać w wyznaczonych punktach zbiorczych.

TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

Avrupa Birliği (AB) Kararnamesi Elektrik ve Elektronik Malzeme Atığı, 2002/96/EC Kararnamesi altında 13 Ağustos 2005 tarihinden itibaren geçerli olmak üzere, elektrikli ve elektronik malzemeler diğer atıklar gibi çöpe atılamayacak ve bu elektonik cihazların üreticileri, cihazların kullanım süreleri bitttikten sonra ürünleri geri toplamakla yükümlü olacaktır. Avrupa Birliği'ne satılan MSI markalı ürünlerin kullanım süreleri bittiğinde MSI ürünlerin geri alınması isteği ile işbirliği içerisinde olacaktır. Ürünlerinizi yerel toplama noktalarına bırakabilirsiniz.

ČESKY

Záleží nám na ochraně životního prostředí - společnost MSI upozorňuje...

Podle směrnice Evropské unie ("EU") o likvidaci elektrických a elektronických výrobků 2002/96/EC platné od 13. srpna 2005 je zakázáno likvidovat "elektrické a elektronické výrobky" v běžném komunálním odpadu a výrobci elektronických výrobků, na které se tato směrnice vztahuje, budou povinni odebírat takové výrobky zpět po skončení jejich životnosti. Společnost MSI splní požadavky na odebírání výrobků značky MSI, prodávaných v zemích EU, po skončení jejich životnosti. Tyto výrobky můžete odevzdat v místních sběrnách.

MAGYAR

Annak érdekében, hogy környezetünket megvédjük, illetve környezetvédőként fellépve az MSI emlékezteti Önt, hogy ...

Az Európai Unió („EU") 2005. augusztus 13-án hatályba lépő, az elektromos és elektronikus berendezések hulladékairól szóló 2002/96/EK irányelve szerint az elektromos és elektronikus berendezések többé nem kezelhetőek lakossági hulladékként, és az ilyen elektronikus berendezések gyártói kötelessé válnak az ilyen termékek visszavételére azok hasznos élettartama végén. Az MSI betartja a termékvisszavétellel kapcsolatos követelményeket az MSI márkanév alatt az EU-n belül értékesített termékek esetében, azok élettartamának végén. Az ilyen termékeket a legközelebbi gyűjtőhelyre viheti.

ITALIANO

Per proteggere l'ambiente, MSI, da sempre amica della natura, ti ricorda che....

In base alla Direttiva dell'Unione Europea (EU) sullo Smaltimento dei Materiali Elettrici ed Elettronici, Direttiva 2002/96/EC in vigore dal 13 Agosto 2005, prodotti appartenenti alla categoria dei Materiali Elettrici ed Elettronici non possono più essere eliminati come rifiuti municipali: i produttori di detti materiali saranno obbligati a ritirare ogni prodotto alla fine del suo ciclo di vita. MSI si adeguerà a tale Direttiva ritirando tutti i prodotti marchiati MSI che sono stati venduti all'interno dell'Unione Europea alla fine del loro ciclo di vita. È possibile portare i prodotti nel più vicino punto di raccolta.

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Chapter 1
Getting Started

Thank you for choosing the P965 Neo Series (MS-7235 v1.X) ATX mainboard. The P965 Neo Series mainboards are based on **Intel® P965** & **ICH8** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® Pentium 4, Pentium D, Core™ 2** series processors, the P965 Neo Series deliver a high performance and professional desktop platform solution.

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Mainboard Specifications

Processor Support

- Intel® Pentium 4, Pentium D, Core™ 2 series processors in LGA775 package

(For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/)pro_mbd_cpu_support.php

Supported FSB

- 1066/ 800/ 533 MHz

Chipset

- North Bridge: Intel® P965 chipset
- South Bridge: Intel® ICH8 chipset

Memory Support

- P965 supports 8GB at maximum.
- Supports DDRII 800/667/533 SDRAM
- 1GB DDRII 800 SDRAM memory module is not supported
- 4 DIMMs DDRII(240pin / 1.8V)

For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php

LAN

- Supports PCI LAN 10/100/1000 Fast Ethernet by Realtek 8110SC

Audio

- Chip integrated by Realtek® AL883
- Flexible 8-channel audio with jack sensing
- Compliant with Azalia 1.0 Spec

IDE

- 1 IDE port by JMicron JMB361
- Supports Ultra DMA 66/100/133 mode
- Supports PIO, Bus Master operation mode

SATA

- 4 SATA II ports by ICH8
- 1 SATA II port by JMicron JMB361
- Supports 5 SATA II devices
- Supports storage and data transfers at up to 300MB/s

Floppy

- 1 floppy port
- Supports 1 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes

Connectors

- **Back Panel**
  - 1 PS/2 mouse port
  - 1 PS/2 keyboard port
  - 1 serial port (COM1)
  - 1 parallel port supporting SPP/EPP/ECP mode
  - 4 USB 2.0 ports
  - 1 LAN jack (10/100/1000)
  - 6 flexible audio jacks

- **On-Board Pinheaders**
  - 1 IrDA pinheader
  - 1 front audio pinheader
  - 1 serial port pinheader
  - 3 USB 2.0 pinheaders

Slots

- 1 PCI Express x16 slot
- 2 PCI Express x1 slots
- 3 PCI slots
- Support 3.3V/ 5V PCI bus Interface

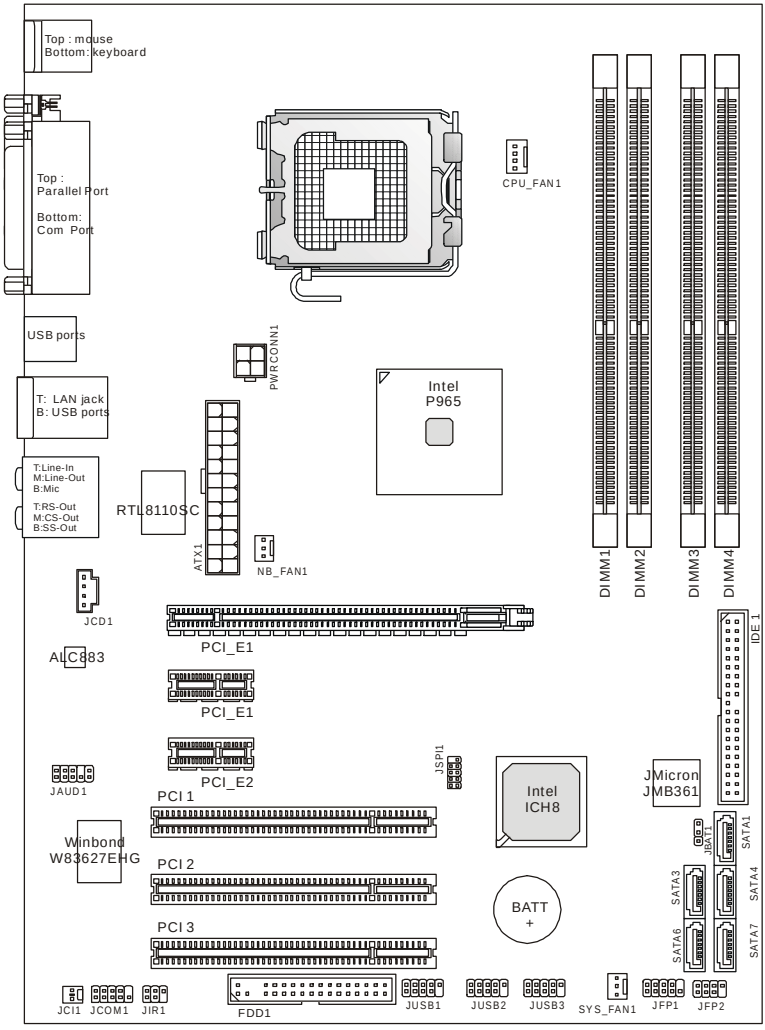
Form Factor

- ATX (30.5cm X 22.0cm)

Mounting

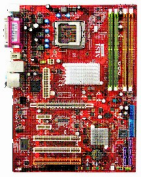
- 6 mounting holes

Mainboard Layout

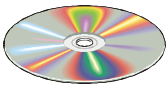


P965 Neo Series (MS-7235 v1.X) ATX Mainboard

Packing Checklist



MSI motherboard



MSI Driver/Utility CD

SATA Cable

Power Cable

Standard Cable for IDE Devices

Back IO Shield

User's Guide

* The pictures are for reference only. Your packing contents may vary depending on the model you purchased.

MSI Special Feature

The Core Center is a new utility you can find in the CD-ROM disk. The utility is just like your PC doctor that can detect, view and adjust the PC hardware and system status during real time operation. In the left side it shows the current system status, including the Vcore, 3.3V, +5V and 12V. In the right side it shows the current PC hardware status such as the CPU & system temperatures and all fans speeds.

When you click the red triangles in the left and right sides, two sub-menus will open for users to adjust the thresholds of system to send out the warning messages.

Left-wing: Current system status
In the left sub-menu, you can configure the settings of FSB, Vcore, Memory Voltage and AGP Voltage by clicking the radio button next to each item and make it available (the radio button will be lighted as yellow when selected), use the "**+**" and "**-**" buttons to adjust, then click **"OK"** to apply the changes. Then you can click **"Save"** to save the values you just configured.
Also you may click **"Auto"** to start testing the maximum CPU overclocking value. The CPU FSB will automatically increase the testing value until the PC reboots. Or you may click **"Default"** to restore the default values.

Right-wing: PC hardware status during real time operation
In the right sub-menu, here you can configure the PC hardware status such as CPU & system temperatures and fan speeds. You may use the scroll bars to adjust each item, then click **"OK"** to apply the changes. The values you set for the temperatures are the maximum thresholds for the system for warnings, and the value for fan speeds are the minimum thresholds.

Important

Items shown on Core Center vary depending on your system status.

Chapter 2
Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

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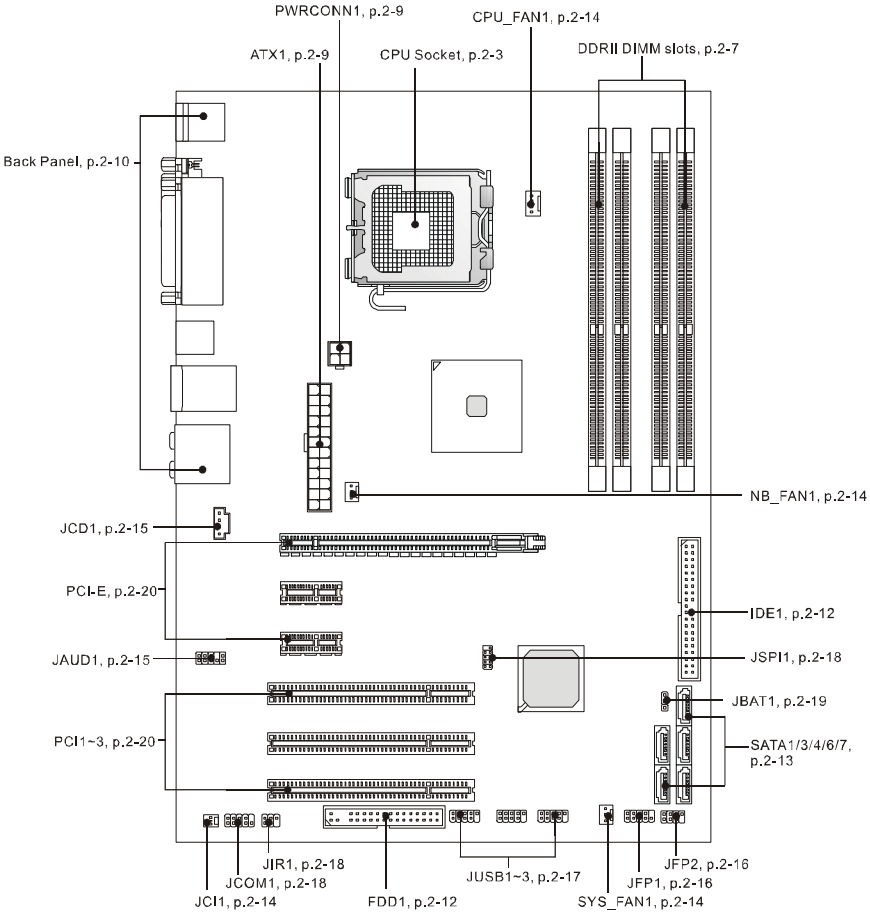
Quick Components Guide



CPU (Central Processing Unit)

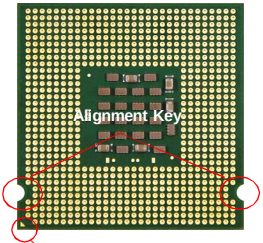
This mainboard supports Intel® Pentium 4, Pentium D, Core™ 2 processor in LGA 775 package. When you are installing the CPU, **make sure to install the cooler to prevent overheating.** If you do not have the CPU cooler, contact your dealer to purchase and install them before turning on the computer.
For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php.

Important

1. *Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating.*
2. *Make sure that you apply an even layer of heat sink paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.*
3. *While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.*

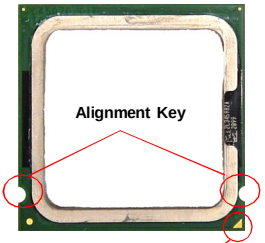
Introduction to LGA 775 CPU

The pin-pad side of LGA 775 CPU.



Yellow triangle is the Pin 1 indicator

The surface of LGA 775 CPU. Remember to apply some silicone heat transfer compound on it for better heat dispersion.



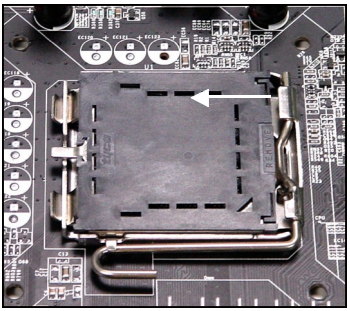
Yellow triangle is the Pin 1 indicator

CPU & Cooler Installation

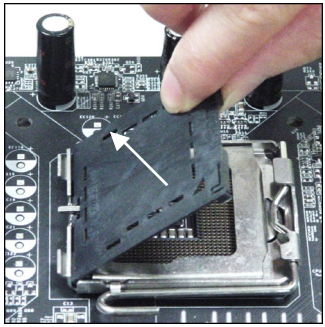
When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating.** If you do not have the cooler, contact your dealer to purchase and install them before turning on the computer. Meanwhile, do not forget to apply some silicon heat transfer compound on CPU before installing the heat sink/cooler fan for better heat dispersion.

Follow the steps below to install the CPU & cooler correctly. Wrong installation will cause the damage of your CPU & mainboard.

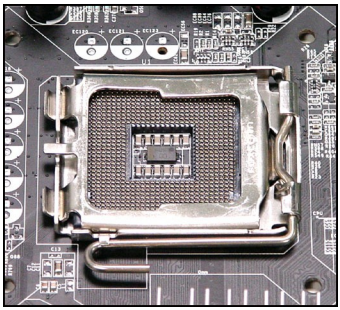
1. The CPU has a plastic cap on it to protect the contact from damage. Before you install the CPU, always cover it to protect the socket pin.



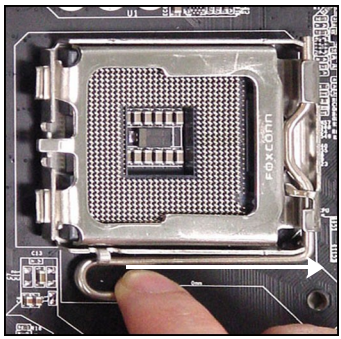
2. Remove the cap from lever hinge side (as the arrow shows).



3. The pins of socket reveal.



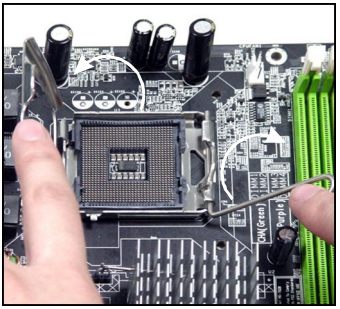
4. Open the load lever.



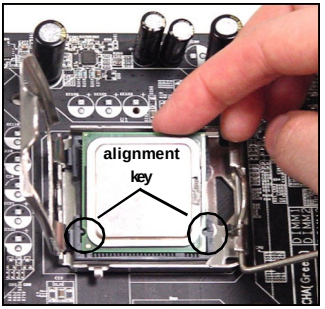
Important

1. Confirm if your CPU cooler is firmly installed before turning on your system.
2. Do not touch the CPU socket pins to avoid damaging.
3. The availability of the CPU land side cover depends on your CPU packing.

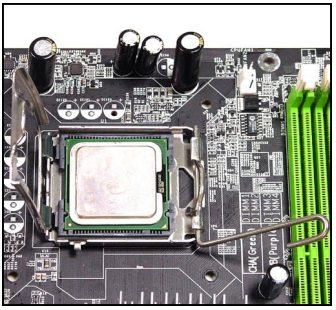
5. Lift the load lever up and open the load plate.



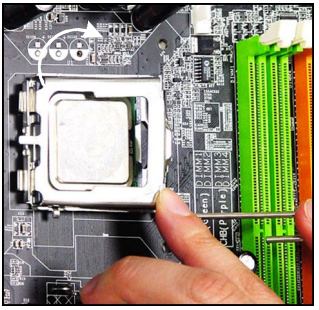
6. After confirming the CPU direction for correct mating, put down the CPU in the socket housing frame. Be sure to grasp on the edge of the CPU base. Note that the alignment keys are matched.



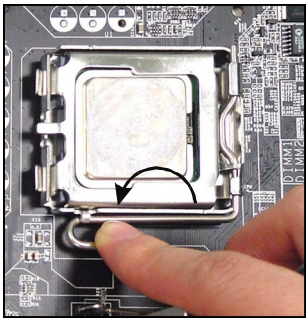
7. Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with pure vertical motion and reinstall.



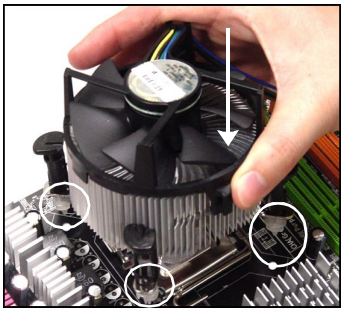
8. Cover the load plate onto the package.



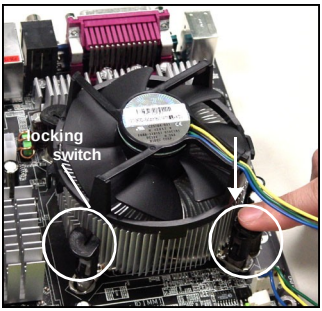
9. Press down the load lever lightly onto the load plate, and then secure the lever with the hook under retention tab.



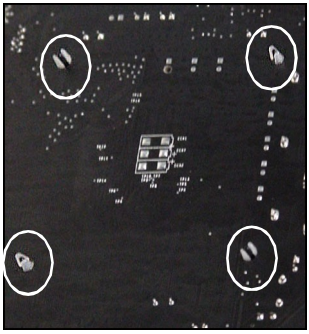
10. Align the holes on the mainboard with the heatsink. Push down the cooler until its four clips get wedged into the holes of the mainboard.



11. Press the four hooks down to fasten the cooler. Then rotate the locking switch (refer to the correct direction marked on it) to lock the hooks.



12. Turn over the mainboard to confirm that the clip-ends are correctly inserted.



Important

1. *Check the information in **PC Health Status** of **H/W Monitor** in BIOS (Chapter 3) for the CPU temperature.*
2. *Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.*

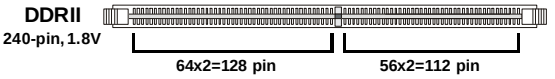
Memory

The mainboard provides four 240-pin non-ECC **DDRII 800*/667/533** DIMM slots and supports up to 8GB system memory.

For more information on compatible components, please visit *http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php*.

Important

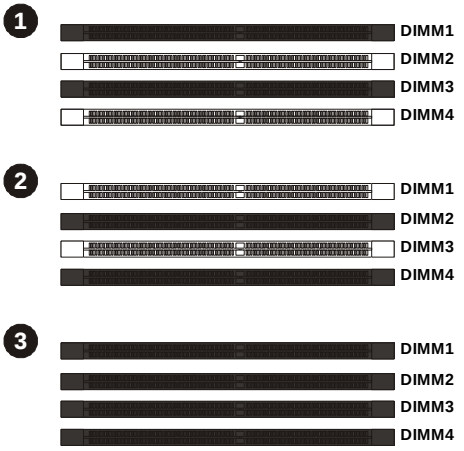
1GB DDRII 800 SDRAM memory module is not supported.



Single-Channel: All DIMMs in GREEN

Dual-Channel: Channel A in GREEN; Channel B in ORANGE

Dual Channel Memory Population Rules



-

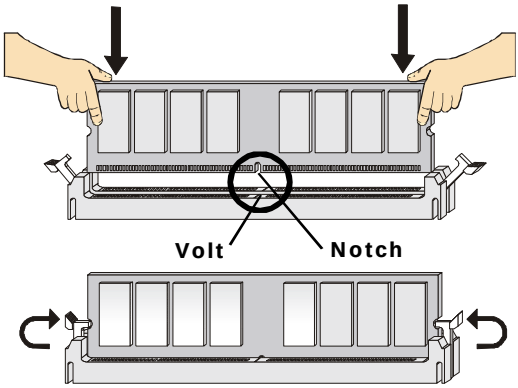
Installing DDRII Modules

1. The memory module has only one notch on the center and will only fit in the right orientation.
2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot.

Important

You can barely see the golden finger if the module is properly inserted in the DIMM slot.

3. The plastic clip at each side of the DIMM slot will automatically close.



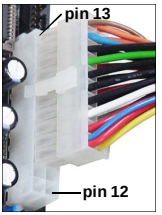
Important

- *DDRII modules are not interchangeable with DDR and the DDRII standard is not backwards compatible. You should always install DDRII memory modules in the DDRII DIMM slots and DDR memory modules in the DDR DIMM slots.*
- *In dual-channel mode, make sure that you install memory modules of **the same type and density** in different channel DDR DIMM slots.*
- *To enable successful system boot-up, always insert the memory modules into the **DIMM1 first.***

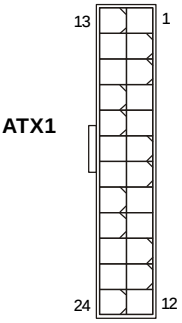
Power Supply

ATX 24-Pin Power Connector: ATX1

This connector allows you to connect an ATX 24-pin power supply. To connect the ATX 24-pin power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.



You may use the 20-pin ATX power supply as you like. If you'd like to use the 20-pin ATX power supply, please plug your power supply along with pin 1 & pin 13 (refer to the image at the right hand). There is also a foolproof design on pin 11, 12, 23 & 24 to avoid wrong installation.

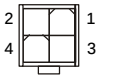


Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS-ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWROK	20	Res
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	NC	24	GND

ATX 12V Power Connector: PWRCONN1

This 12V power connector is used to provide power to the CPU.



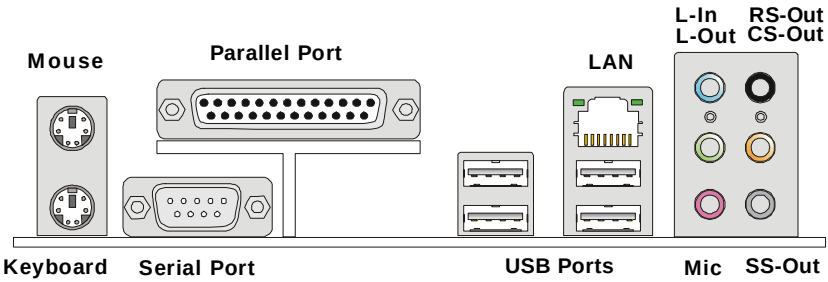
Pin Definition

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

Important

1. *Maker sure that all the connectors are connected to proper ATX power supplies to ensure stable operation of the mainboard.*
2. *Power supply of 350 watts (and above) is highly recommended for system stability.*
3. *ATX 12V power connection should be greater than 18A.*
4. *For this model, you **must** use a power supply that comes with a **-5V** pin supply.*

Back Panel



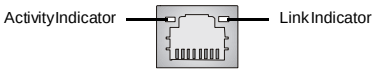
▶ Mouse/Keyboard Connector
The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/keyboard.

▶ Parallel Port Connector
A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.

▶ Serial Port Connector
The serial port is a 16550A high speed communications port that sends/ receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

▶ USB Connectors
The OHCI (Open Host Controller Interface) Universal Serial Bus root is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

▶ LAN (RJ-45) Jack
The standard RJ-45 jack is for connection to single Local Area Network (LAN). You can connect a network cable to it.



LED	Color	LED State	Condition
Left	Orange	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

▶ Audio Port Connectors
These audio connectors are used for audio devices. You can differentiate the color of the audio jacks for different audio sound effects.

- **Blue audio jack** - Line In / Side-Surround Out in 7.1 channel mode, is used

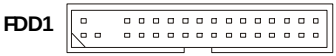
for external CD player, tapeplayer or other audio devices.

- **Green audio jack** - Line Out, is a connector for speakers or headphones.
- **Pink audio jack** - Mic In, is a connector for microphones.
- **Black audio jack** - Rear-Surround Out in 5.1/ 7.1 channel mode.
- **Orange audio jack** - Center/ Subwoofer Out in 5.1/ 7.1 channel mode.
- **Gray audio jack** - Side-Surround Out in 7.1 channel mode.

Connectors

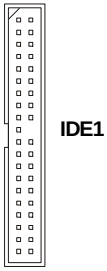
Floppy Disk Drive Connector: FDD1

This standard FDD connector supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



Hard Disk Connector: IDE1

The mainboard provides a one-channel Ultra ATA 133 bus Master IDE controller that supports PIO mode 0~4, Bus Master, and Ultra DMA 66/100/133 function. You can connect hard disk drives, CD-ROM drives and other IDE devices.



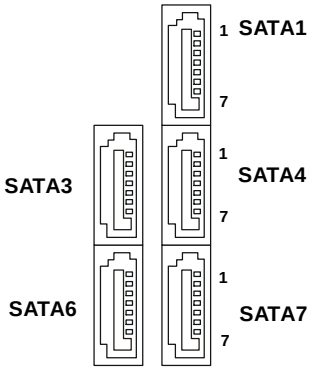
IDE1 (Primary IDE Connector)
IDE1 can connect a Master and a Slave drive. You must configure the second hard drive to Slave mode by setting the jumper accordingly.

Important

If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

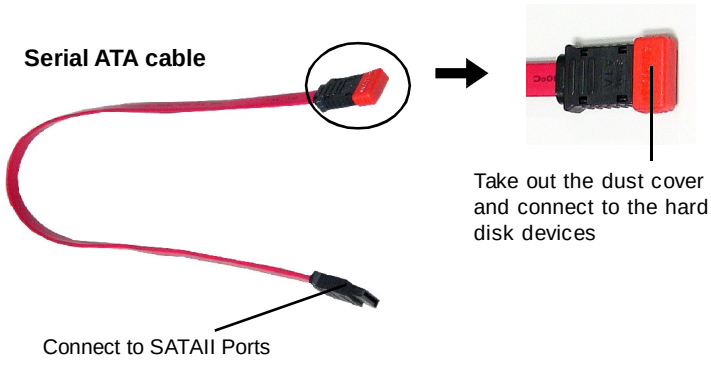
Serial ATAII Connectors: SATA1/3/4/6/7

SATA1/3/4/6/7 are high-speed Serial ATAII interface ports. Each supports 2nd generation serial ATA data rates of 300MB/s and is fully compliant with Serial ATA 2.0 specifications. Each Serial ATAII connector can connect to 1 hard disk device.



SATA1/3/4/6/7 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	RXN
3	RXP	4	GND
5	TXN	6	TXP
7	GND		

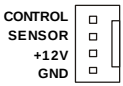


Important

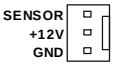
Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.

Fan Power Connectors: CPU_FAN1, NB_FAN1, SYS_FAN1

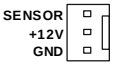
The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



CPU_FAN1



NB_FAN1



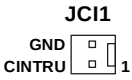
SYS_FAN1

Important

1. *Please refer to the recommended CPU fans at Intel® official website or consult the vendors for proper CPU cooling fan.*
2. *CPU_FAN1 supports fan control. You can install* ***Core Center*** *utility that will automatically control the CPU fan speed according to the actual CPU temperature.*

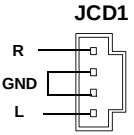
Chassis Intrusion Switch Connector: JCI1

This connector connects to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.



CD-In Connector: JCD1

This connector is provided for CD-ROM audio.



Front Panel Audio Connector: JAUD1

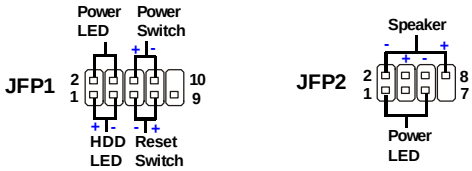
The JAUD1 front panel audio connector allows you to connect the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.

JAUD1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	PORT 1L	Analog Port 1 - Left channel
2	GND	Ground
3	PORT 1R	Analog Port 1 - Right channel
4	PRESENCE#	Active low signal - signals BIOS that a High Definition Audio dongle is connected to the analog header. PRESENCE# = 0 when a High Definition Audio dongle is connected.
5	PORT 2R	Analog Port 2 - Right channel
6	SENSE1_RETIRN	Jack detection return from front panel JACK1
7	SENSE_SEND	Jack detection sense line from the High Definition Audio CODEC jack detection resistor network
8	KEY	Connector Key
9	PORT 2L	Analog Port 2 - Left channel
10	SENSE2_RETIRN	Jack detection return from front panel JACK2

Front Panel Connectors: JFP1/JFP2

The mainboard provides two front panel connectors for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED +	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED -	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW -	Reset Switch low reference pull-down to GND
6	PWR_SW +	Power Switch high reference pull-up
7	RST_SW +	Reset Switch high reference pull-up
8	PWR_SW -	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

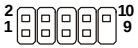
JFP2 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	GND	Ground
2	SPK-	Speaker-
3	SLED	Suspend LED
4	BUZ+	Buzzer+
5	PLED	Power LED
6	BUZ-	Buzzer-
7	NC	No connection
8	SPK+	Speaker+

Front USB Connectors: JUSB1, JUSB2, JUSB3

The mainboard provides three USB 2.0 pinheaders (optional USB 2.0 bracket available) that are compliant with Intel® I/O Connectivity Design Guide. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.

JUSB1/2/3



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	USBOC

USB 2.0 Bracket
(Optional)

Important

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

IrDA Infrared Module Header: JIR1

The connector allows you to connect to IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function. JIR1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

JIR1

Pin Definition

Pin	Signal
1	IRRX
2	IRTX
3	GND
4	VCC5
5	NC
6	NC

SPI Debugging Pin Header: JSPI1

The pin header is for internal debugging only.

JSPI1

Serial Port Connector: JCOM1

The mainboard provides one 9-pin header as serial port COM1. The port is a 16550A high speed communication port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to it.

JCOM1

Pin Definition

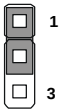
PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

Jumpers

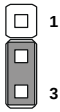
Clear CMOS Jumper: JBAT1

There is a CMOS RAM onboard that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set the JCMOS1 (Clear CMOS Jumper) to clear data.

JBAT1



Keep Data



Clear Data

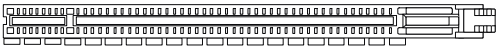
Important

You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

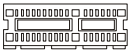
Slots

PCI (Peripheral Component Interconnect) Express Slots

PCI Express architecture provides a high performance I/O infrastructure for Desktop Platforms with transfer rates starting at 2.5 Giga transfers per second over a PCI Express x1 lane for Gigabit Ethernet, TV Tuners, 1394 controllers, and general purpose I/O. Also, desktop platforms with PCI Express Architecture will be designed to deliver highest performance in video, graphics, multimedia and other sophisticated applications. Moreover, PCI Express architecture provides a high performance graphics infrastructure for Desktop Platforms doubling the capability of existing AGP 8x designs with transfer rates of 4.0 GB/s over a PCI Express x16 lane for graphics controllers, while PCI Express x1 supports transfer rate of 250 MB/s.



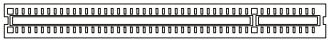
PCI Express x16 Slot



PCI Express x1 Slot

PCI (Peripheral Component Interconnect) Slots

The PCI slots support LAN cards, SCSI cards, USB cards, and other add-on cards that comply with PCI specifications. At 32 bits and 33 MHz, it yields a throughput rate of 133 MBps.



32-bit PCI Slot

Important

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT B#	INT C#	INT D#	INT A#
PCI Slot 2	INT C#	INT D#	INT A#	INT B#
PCI Slot 3	INT D#	INT A#	INT B#	INT C#

Chapter 3
BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.
You may need to run the Setup program when:

- An error message appears on the screen during the system booting up, and requests you to run SETUP.
- You want to change the default settings for customized features.

MSI
MICRO-STAR INTERNATIONAL

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Important

1. *The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*
2. *Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format:*

   W7235IMS V1.0 031505 where:

   1st digit refers to BIOS maker as A = AMI, W = AWARD, and P = PHOENIX.
   2nd - 5th digit refers to the model number.
   6th digit refers to the chipset as I = Intel, N = nVidia, and V = VIA.
   7th - 8th digit refers to the customer as MS = all standard customers.
   V1.0 refers to the BIOS version.
   031505 refers to the date this BIOS was released.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F10>	Save all the CMOS changes and exit

Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

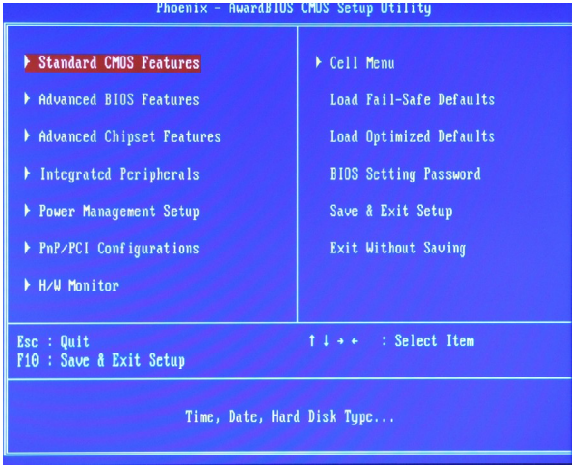
Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Main Menu



▶ Standard CMOS Features
Use this menu for basic system configurations, such as time, date etc.

▶ Advanced BIOS Features
Use this menu to setup the items of AWARD® special enhanced features.

▶ Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

▶ Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

▶ Power Management Features
Use this menu to specify your settings for power management.

▶ PCI/PNP Resource Management
This entry appears if your system supports PnP/PCI.

▶ H/W Monitor
This entry shows your PC health status.

▶ Cell Menu
Use this menu to specify your settings for CPU/AGP frequency/voltage control and overclocking.

▶ Load Fail-Safe Defaults
Use this menu to load the default values set by the mainboard manufacturer.

▶ Load Optimized Defaults
Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

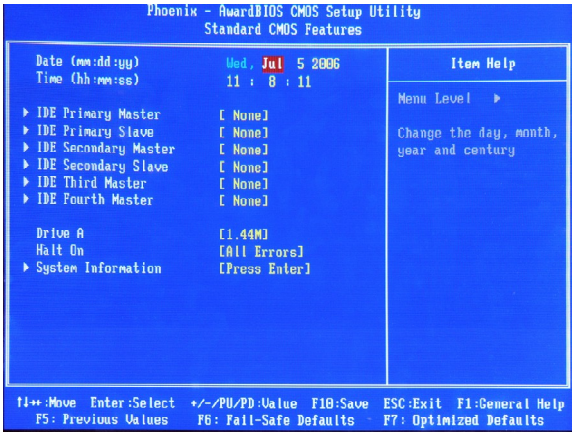
▶ BIOS Setting Password
Use this menu to set the password for BIOS.

▶ Save & Exit Setup
Save changes to CMOS and exit setup.

▶ Exit Without Saving
Abandon all changes and exit setup.

Standard CMOS Features

The items in Standard CMOS Features Menu includes some basic setup items. Use the arrow keys to highlight the item and then use the <+> or <-> keys to select the value you want in each item.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Wed, Jul 5 2006
Time (hh:mm:ss) 11 : 8 : 11
IDE Primary Master [None]
IDE Primary Slave [None]
IDE Secondary Master [None]
IDE Secondary Slave [None]
IDE Third Master [None]
IDE Fourth Master [None]
Drive A [1.44M]
Halt On [All Errors]
System Information [Press Enter]
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

▶ Date (mm:dd:yy)
This allows you to set the system to the date that you want (usually the current date). The format is <day> <month> <date> <year>.

day Day of the week, from Sun to Sat, determined by BIOS. Read only.
month The month from Jan. through Dec.
date The date from 1 to 31 can be keyed by numeric function keys.
year The year can be adjusted by users.

▶ Time (hh:mm:ss)
This allows you to set the system time that you want (usually the current time). The time format is <hour> <minute> <second>.

▶ IDE Primary/Secondary/Third/Fourth Master/Slave
Press <+> or <-> to select the hard disk drive type. The specification of hard disk drive will show up on the right hand according to your selection. Press <Enter> for the sub-menu of each item:

▶ IDE HDD Auto-Detection
Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

▶IDE Primary/Secondary Master/Slave
Selecting "manual" lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc.

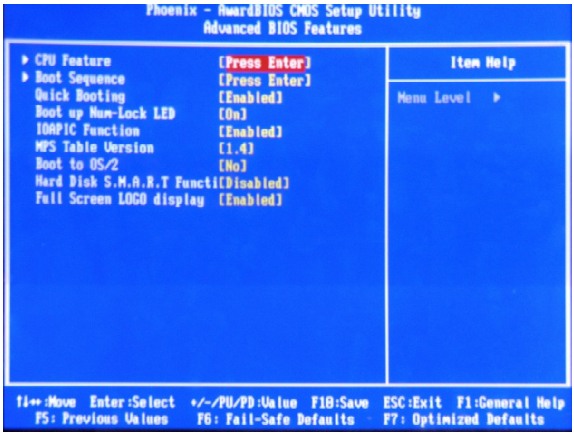
▶ Access Mode
Choose the access mode forthis hard disk

▶ Halt On
The setting determines whether the system will stop if an error is detected at boot. Available options are:

[No Errors]	The system doesn't stop for any detected error.
[All, But Keyboard]	The system doesn't stop for a keyboard error.

****System Information****
CPU Type and memory status of your system (read only).

Advanced BIOS Features


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
CPU Feature [Press Enter]
Boot Sequence [Press Enter]
Quick Booting [Enabled]
Boot up Num-Lock LED [On]
IOAPIC Function [Enabled]
MPS Table Version [1.4]
Boot to OS/2 [No]
Hard Disk S.M.A.R.T Functi[Disabled]
Full Screen LOGO display [Enabled]
Item Help
Menu Level ▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

▶ CPU Feature
Press <Enter> to enter the sub-menu:

▶ Set Limit CPUID MaxVal to 3
[enabled] The processor will limit the maximum CPUID input value to 03h when queried, even if the processor supports a higher CPUID input value.
[disabled] The processor will return the actual maximum CPUID input value of the processor when queried.

▶ C1E Support
This item allows you to enable/disable the C1E power management feature which can also drop clock speed and voltage on the processor.

▶ Execute Bit Support
Execute Bit capability is a robust hardware feature, detectable using the CPUID instruction, that protects against malicious software executing code on IA-32 systems.

▶ Intel(R) Speedstep(tm) Technology
The Intel SpeedStep technology allows you to set the performance level of the microprocessor whether the computer is running on battery or AC power. This field will appear after you installed the CPU which support speedstep technology.

▶ Virtualization Technology (Only for the CPU with dual core)
Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple irtual?systems. With enhancements to Intel various platforms, Intel Virtualization Technology can improve the robustness and performance of today software-only solutions.

Important

Available settings for "1st/2nd/3rd Boot Device" vary depending on the bootable devices you have installed.

▶ Boot Sequence
Press <Enter> to enter the sub-menu:

▶ 1st/2nd/3rd Boot Device
The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.

▶ Boot from Other Device
Setting the option to [YES] allows the system to try to boot from other device if the system fails to boot from the 1st/2nd/3rd boot device.

▶ Quick Booting
Setting the item to [Enabled] allows the system to boot within 5 seconds since it will skip some check items.

▶ Boot Up Num-Lock LED
This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

▶ IOAPIC Function
This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance with PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQ resources for the system.

▶ MPS Table Version
This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system.

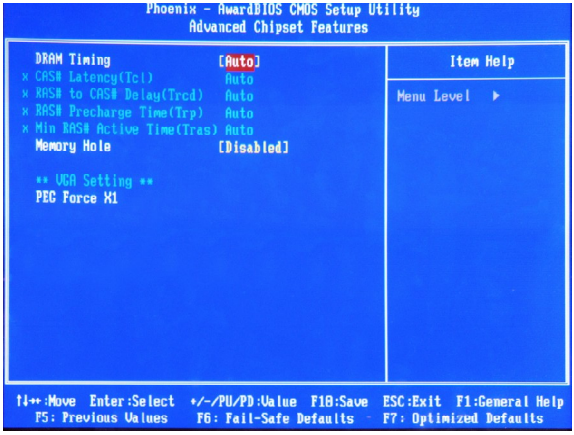
▶ Boot to OS/2
This allows you to run the OS/2® operating system with DRAM larger than 64MB. When you choose [No], you cannot run the OS/2® operating system with DRAM larger than 64MB. But it is possible if you choose [Yes].

▶ Hard Disk S.M.A.R.T Function
This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline.

▶ Full Screen LOGO Display
This item enables you to show the company logo on the bootup screen. Settings are:

[Enabled]	Shows a still image (logo) on the full screen at boot.
[Disabled]	Shows the POST messages at boot.

Advanced Chipset Features


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
DRAM Timing [Auto]
x CAS# Latency(Tcl) Auto
x RAS# to CAS# Delay(Trcd) Auto
x RAS# Precharge Time(Trp) Auto
x Min RAS# Active Time(Tras) Auto
Memory Hole [Disabled]
** VGA Setting **
PEG Force X1
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Important

Change these settings only if you are familiar with the chipset.

▶ DRAM Timing
The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.

▶ CAS# Latency (Tcl)
This controls the CAS latency, which determines the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Smaller clocks increase system performance while bigger clocks provide more stable system performance.

▶ RAS# to CAS# delay (Trcd)
When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The less the clock cycles, the faster the DRAM performance.

▶ RAS Precharge Time (Trp)
When the ***DRAM Timing Control*** is set to [Manual], this field is adjustable. This setting controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refresh may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system.

▶ Min RAS# Active Time (Tras)
This setting determines the time RAS takes to read from and write to a memory cell.

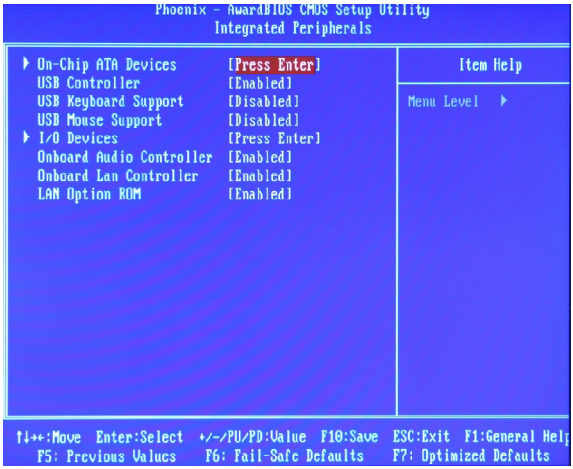
▶ Memory Hole
In order to improve performance, certain space in memory can be reserved for ISA peripherals. This memory must be mapped into the memory space below 16MB. When this area is reserved, it cannot be cached.

▶ PEG Force X1
This BIOS feature allows you to convert a PCI Express X16 slot into a PCI Express X1 slot. When [Enabled], the PCI Express X16 slot will be forced to run in the PCI Express X1 mode. When [Disabled], the PCI Express X16 slot will be allowed to run in its normal PCI Express X16 mode.

If you have a PCI Express X16 graphics card installed in your system, you should disable this BIOS feature. This allows for optimal performance of the card by ensuring maximum transfer rates between the graphics card and the motherboard.

But if you need to install a PCI Express X1 card into the PCI Express X16 slot, you should enable this BIOS feature to ensure maximum compatibility.

Integrated Peripherals


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
On-Chip ATA Devices [Press Enter]
USB Controller [Enabled]
USB Keyboard Support [Disabled]
USB Mouse Support [Disabled]
I/O Devices [Press Enter]
Onboard Audio Controller [Enabled]
Onboard Lan Controller [Enabled]
LAN Option ROM [Enabled]
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

▶ On-Chip ATA Devices
Press <Enter> to enter the sub-menu:

▶ IDE HDD Block Mode
Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select [Enabled] for automatic detection of the optimal number of block read/writes per sector the drive can support.

▶ PCI IDE BusMaster
This item allows you to enable/ disable the PCI IDE busmaster.

▶ Primary/Secondary Master/Slave PIO
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In [Auto] mode, the system automatically determines the best mode for each device.

▶ Primary/Secondary Master/Slave UDMA
Ultra DMA 33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows ME, XP or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, Ultra DMA/66, Ultra DMA/100 and Ultra DMA/133, select [Auto] to enable BIOS support.

▶ On-Chip Secondary PCI IDE
This item allows you to enable/ disable the secondary PCI IDE.

▶ IDE\RAID Control
This item is available for you to enable/disable the onboard IDE RAID function.

▶ USB Controller
This setting is used to enable/disable the onboard USB host controller.

▶ USB Keyboard Support
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

▶ USB Mouse Support
Select [Enabled] if you need to use a USB-interfaced mouse in the operating system.

▶ I/O Devices
Press <Enter> to enter the sub-menu:

▶ COM Port 1
This item allows you to select Serial Port1 base addresses.

▶ COM Port 2/IR
This item allows you to select Serial Port2 base addresses.

▶ UART Mode Select
This setting allows you to specify the operation mode for serial port 2.

[Normal]	RS-232C Serial Port
[IrDA]	IrDA-compliant Serial Infrared Port
[ASKIR]	Amplitude Shift Keyed Infrared Port

▶ RxD, TxD Active
This setting controls the receiving and transmitting speed of the IR peripheral in use.

▶ IR Transmission Delay
This setting determines whether the IR transmission rate will be delayed while converting to receiving mode.

▶ UR2 Duplex Mode
This setting controls the operating mode of IR transmission/reception. Under [Full] Duplex mode, synchronous, bi-directional transmission/reception is allowed. Under [Half] Duplex mode, only asynchronous, bi-directional transmission/reception is allowed.

▶ Use IR Pins
Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals.

▶ Parallel Port
There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features.

▶ Parallel Port Mode

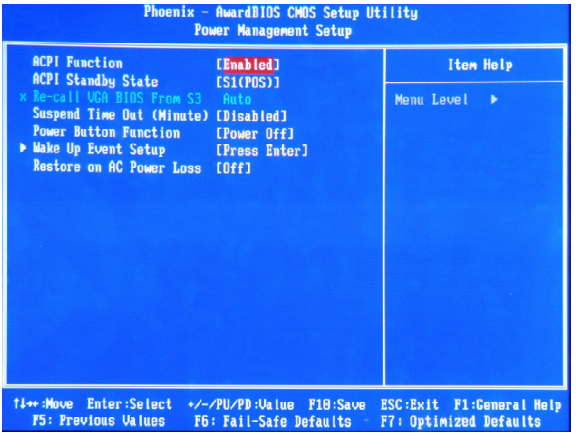
[SPP]	Standard Parallel Port
[EPP]	Enhanced Parallel Port
[ECP]	Extended Capability Port
[ECP+EPP]	Extended Capability Port + Enhanced Parallel Port

To operate the onboard parallel port as Standard Parallel Port only, choose [SPP]. To operate the onboard parallel port in the EPP mode simultaneously, choose [EPP]. By choosing [ECP], the onboard parallel port will operate in ECP mode only. Choosing [ECP + EPP] will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.

▶ EPP Version
Select EPP port type 1.7 or 1.9, as required by your parallel peripheral.

▶ ECP DMA
The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: “ECP Mode Use DMA.” At this time, the user can choose between DMA channel [3] or [1].

Power Management Setup


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
ACPI Function [Enabled]
ACPI Standby State [S1(POS)]
x Re-call VGA BIOS From S3 Auto
Suspend Time Out (Minute) [Disabled]
Power Button Function [Power Off]
▶ Wake Up Event Setup [Press Enter]
Restore on AC Power Loss [Off]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Important

S3-related functions described in this section are available only when your BIOS supports S3 sleep mode.

▶ ACPI Function

This item is to activate the ACPI (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware, such as Windows 98SE/ 2000/ME/XP, select [Enabled]. Settings: [Enabled] and [Disabled].

▶ ACPI Standby State

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

[S1(POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.

[S3(STR)] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a “wake up” event occurs.

▶ Re-Call VGA BIOS from S3
Selecting [Enabled] allows BIOS to call VGA BIOS to initialize the VGA card when system wakes up (resumes) from S3 sleep state. The system resume time is shortened when you disable the function, but system will need an AGP driver to initialize the VGA card. Therefore, if the AGP driver of the card does not support the initialization feature, the display may work abnormally or not function after resuming from S3.

▶ Suspend Time Out (Minute)
If system activity is not detected for the length of time specified in this field, all devices except CPU will be shut off.

▶ Power Button Function
This feature allows users to configure the Power Button function. Settings are:

[Power Off]	The power button functions as a normal power-on/-off button.
[Suspend]	When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

▶ Wakeup Event Setup
Press <Enter> to enter sub-menu.

▶ Resume By PCIE Device
The item specifies how the system will be awakened from power saving mode when input signal of the PCI Express is detected

▶ Resume By PCI Device
The item specifies how the system will be awakened from power saving mode when input signal of the PCI is detected

▶ Resume From S3 By USB Device
The item allows the activity of the USB device to wake up the system from S3 (Suspend to RAM) sleep state.

▶ Resume by RTC Alarm
This is used to enable or disable the feature of booting up the system on a scheduled time/date from the S3, S4, and S5 power off state.

▶ Date (of Month) Alarm
The field specifies the date for ***Resume by RTC Alarm***.

▶ Time (hh:mm:ss) Alarm
The field specifies the time for ***Resume by RTC Alarm***. Format is <hour><minute> <second>.

▶ Resume By PS/2 Keyboard
This setting only works ***Resume By PS/2 Keyboard*** is set to [Hot Key]. This setting specifies how the system will be awakened from power saving mode when input signal of the keyboard is detected.

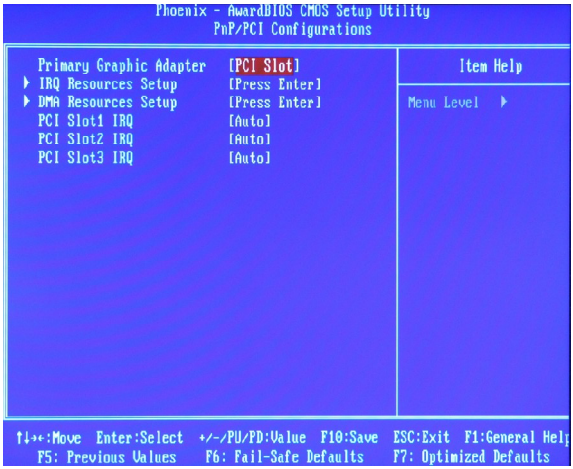
▶ Resume By PS/2 Mouse
The item specifies how the system will be awakened from power saving mode when input signal of the mouse is detected.

▶ Restore on AC Power Loss
This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

[Power Off]	Leaves the computer in the power off state.
[Power On]	Leaves the computer in the power on state.
[Last State]	Restores the system to the previous status before power failure or interrupt occurred.

PNP/PCI Configurations

This section describes configuring the PCI bus system and PnP (Plug & Play) feature. PCI, or **P**eripheral **C**omponent **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
Primary Graphic Adapter [PCI Slot]
IRQ Resources Setup [Press Enter]
DMA Resources Setup [Press Enter]
PCI Slot1 IRQ [Auto]
PCI Slot2 IRQ [Auto]
PCI Slot3 IRQ [Auto]
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

► Primary Graphics Adapter

This setting specifies which VGA card is your primary graphics adapter. Setting options are:

[PCIEX] The system initializes the installed PCI-EX16 VGA card first. If a PCI-E VGA card is not available, it will initialize the PCI VGA card.

[PCI Slot] The system initializes the installed PCI VGA card first. If a PCI VGA card is not available, it will initialize the AGP card.

► IRQ Resources Setup

Press <Enter> to enter the submenu:

► IRQ 3/4/5/7/9/10/11/14/15

These items specify the bus where the specified IRQ line is used.

The settings determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the IRQ pool, the end user can use these settings to reserve the IRQ by assigning an [Reserved] setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as [Available]. If all IRQs are set to [Reserved], and IRQ 14/15 are allocated to the onboard PCI IDE, IRQ 9 will still be available for PCI and PnP devices.

Important

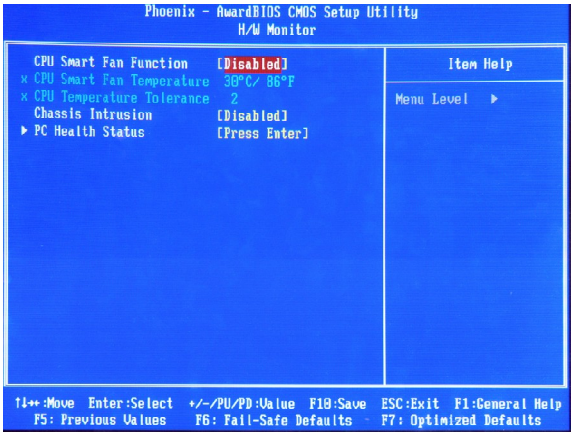
IRQ (Interrupt Request) lines are system resources allocated to I/O devices. When an I/O device needs to gain attention of the operating system, it signals this by causing an IRQ to occur. After receiving the signal, when the operating system is ready, the system will interrupt itself and perform the service required by the I/O device.

▶ DMA Resources Setup
Press <Enter> and you will enter the sub-menu of the items.DMA Resources 0/1/3/5/6/7 for setting determine if BIOS should remove a DMA from the available DMAs passed to devices that are configurable by the system BIOS. The available DMA pool is determined by reading the NVRAM. If more DMAs must be removed from the pool, the end user can reserve the DMA.

▶ PCI Slot1~3 IRQ Preference
These items specify the IRQ line for each PCI slot.

H/W Monitor

This section shows the status of your CPU, fan, overall system status, etc. Monitor function is available only if there is hardware monitoring mechanism onboard.


Phoenix - AwardBIOS CMOS Setup Utility
H/W Monitor
CPU Smart Fan Function [Disabled]
x CPU Smart Fan Temperature 30°C/ 86°F
x CPU Temperature Tolerance 2
Chassis Intrusion [Disabled]
PC Health Status [Press Enter]
Item Help
Menu Level
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

▶ CPU Smart Fan Function
This item allows you to enable/disable the CPU smart fan function.

▶ CPU Smart Fan Temperature
The mainboard provides the Smart Fan system which can control the fan speed automatically depending on the current temperature to keep it with in a specific range.

▶ CPU Temperature Tolerance
You can select a fan tolerance value here for the specific range for the “Smart CPU Fan” item. If the current temperature of the fan reaches to the maximum threshold (the temperatures set in the “Smart CPU Fan” plus the tolerance values you set here), the fan will speed up for cooling down. On the contrary, if the current temperature reaches to the minimum threshold (the set temperatures minus the tolerance value), the fan will slow down to keep the temperature stable.

▶ Chassis Intrusion
The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later.

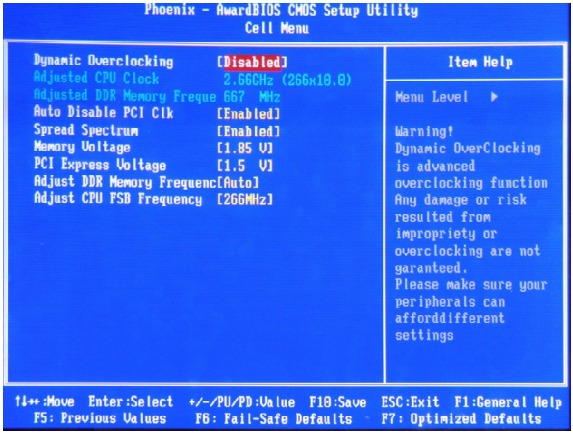
▶ PC Health Status
Press <Enter> to enter the submenu:

► System/CPU Temperature, CPU Vcore, 3.3V, 5V, 5VSB, System/CPU Fan Speed

These items display the current status of all of the monitored hardware devices/ components such as CPU voltages, temperatures and all fans' speeds.

Cell Menu

The items here includes some important settings of CPU and PCI functions.


Phoenix - AwardBIOS CMOS Setup Utility
Cell Menu
Dynamic Overclocking [Disabled]
Adjusted CPU Clock 2.66GHz (266x10.0)
Adjusted DDR Memory Freque 667 MHz
Auto Disable PCI Clk [Enabled]
Spread Spectrum [Enabled]
Memory Voltage [1.85 V]
PCI Express Voltage [1.5 V]
Adjust DDR Memory Frequenc[Auto]
Adjust CPU FSB Frequency [266MHz]
Item Help
Menu Level ▶
Warning!
Dynamic OverClocking is advanced overclocking function Any damage or risk resulted from impropriety or overclocking are not garanteed.
Please make sure your peripherals can affordddifferent settings
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

▶ Dynamic OverClocking

Dynamic Overclocking Technology is the automatic overclocking function, included in the MSI™'s newly developed CoreCell™ Technology. It is designed to detect the load balance of CPU while running programs, and to adjust the best CPU frequency automatically. When the motherboard detects CPU is running programs, it will speed up CPU automatically to make the program run smoothly and faster. When the CPU is temporarily suspending or staying in the low load balance, it will restore the default settings instead. Usually the Dynamic Overclocking Technology will be powered only when users' PC need to run huge amount of data like 3D games or the video process, and the CPU frequency need to be boosted up to enhance the overall performance.
Setting options:

[Disabled] Disable Dynamic Overclocking.
[Private] 1st level of overclocking, increasing the CPU frequency by 1%.
[Sergeant] 2nd level of overclocking, increasing the CPU frequency by 3%.
[Captain] 3rd level of overclocking, increasing the CPU frequency by 5%.
[Colonel] 4th level of overclocking, increasing the CPU frequency by 7%.
[General] 5th level of overclocking, increasing the CPU frequency by 10%.
[Commander] 6th level of overclocking, increasing the CPU frequency by 15%.

▶ Adjusted CPU Clock

Indicates the adjusted CPU clock

▶ Adjusted DDR Memory Frequency

Indicates the adjusted DDR memory frequency

▶ Auto Disable PCI Clk
This item is used to auto disable the PCI slots. When set to [Enabled], the system will remove (turn off) clocks from empty PCI slots to minimize the electromagnetic interference (EMI).

▶ Spread Spectrum
When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The ***Spread Spectrum*** function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at [Disabled] for optimal system stability and performance. But if you are plagued by EMI, select the desired range for EMI reduction. Remember to disable ***Spread Spectrum*** function if you are overclocking, because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up.

▶ Memory Voltage
Adjusting the memory voltage can increase the memory speed. Any changes made to this setting may cause a stability issue, so ***changing the memory voltage for long-term purpose is NOT recommended***.

▶ PCI Express Voltage
Adjusting the PCI Express voltage can increase the PCI-E speed. Any changes made to this setting may cause a stability issue, so ***changing the PCI-E voltage for long-term purpose is NOT recommended***.

▶ Adjust DDR Memory Frequency
This item allows you to select the DDR memory frequency (in MHz) and overclock the processor by adjusting to a higher frequency.

▶ Adjust CPU FSB Frequency
This item allows you to select the CPU Front Side Bus clock frequency (in MHz) and overclock the processor by adjusting the FSB clock to a higher frequency.

CPU and Memory Clock Overclocking

The **Dynamic OverClocking / FSB & Memory Clock Ratio/ Adjust CPU Ratio/ CPU FSB Frequency** are the items for you to overclock the CPU and the Memory. Please refer to the descriptions of these fields for more information.

MSI Reminds You...

*1. CPU Clock = FSB Frequency * Adjust CPU Ratio*

2. Memory speed = FSB Frequency x Memory Ratio x Double Data Rate

3. This motherboard supports overclocking greatly. However, please make sure your peripherals and components are bearable for some special settings. Any operation that exceeds product specification is not recommended. Any risk or damge resulting from improper operation will not be under our product warranty.

To save your system from failed overclocking...

Reboot

1. Press the Power button to reboot the system three times. Please note that, to avoid electric current to affect other devices or components, we suggest an interval of more than 10 seconds among the reboot actions.

2. At the fourth reboot, BIOS will determine that the previous overclocking is failed and restore the default settings automatically. Please press any key to boot the system normally when the following message appears on screen.

```
Warning !!! The previous performance of overclocking is failed,
and the system is restored to the defaults setting.
Please press any key to continue...
```

Clear CMOS

- Please refer to “chapter 2” for more information about how to clear CMOS data.

Load Optimized Defaults

The two options on the main menu allow users to restore all of the BIOS settings to the default Fail-Safe or Optimized values. The Optimized Defaults are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for stable system performance.

When you select Load Fail-Safe Defaults, a message as below appears:

Pressing *Y* loads the BIOS default values for the most stable, minimal system performance.

When you select Load Optimized Defaults, a message as below appears:

Pressing *Y* loads the default factory settings for optimal system performance.

BIOS Setting Password

When you select this function, a message as below will appear on the screen:

Type the password, up to 6 characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Appendix A
Realtek ALC883 Audio

The Realtek ALC883 provides 10-channel DAC that simultaneously supports 7.1 sound playback and 2 channels of independent stereo sound output (multiple streaming) through the Front-Out-Left and Front-Out-Right channels.

MSI
MICRO-STAR INTERNATIONAL

Installing the Realtek HD Audio Driver

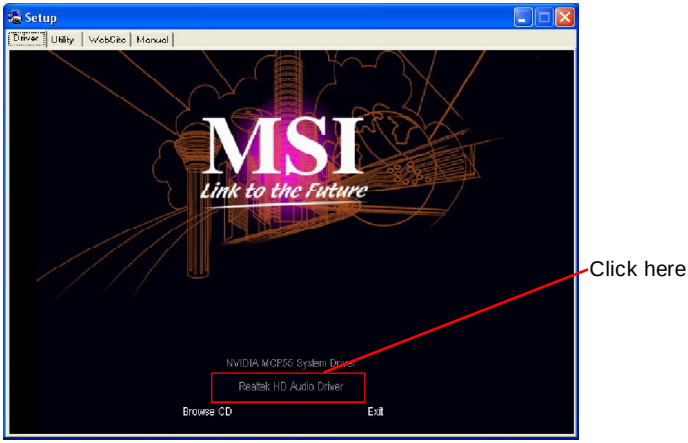
You need to install the driver for Realtek ALC883 codec to function properly before you can get access to 2-, 4-, 6-, 8- channel or 7.1+2 channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

Installation for Windows 2000/XP

For Windows® 2000, you must install Windows® 2000 Service Pack4 or later before installing the driver. For Windows® XP, you must install Windows® XP Service Pack1 or later before installing the driver.

The following illustrations are based on Windows® XP environment and could look slightly different if you install the drivers in different operating systems.

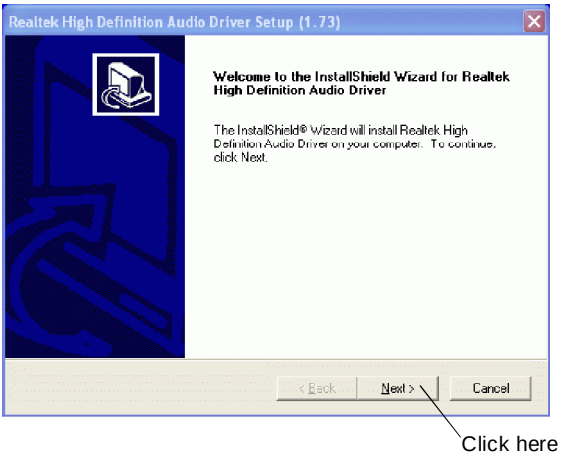
1. Insert the application CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click **Realtek HD Audio Driver**.



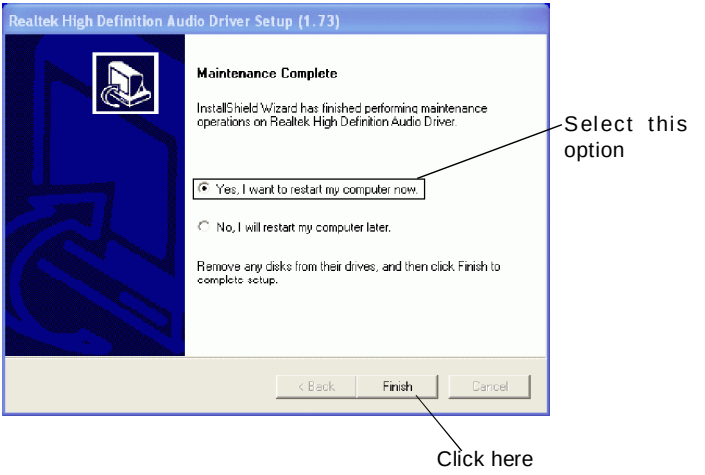
Important

*The **HD Audio Configuration** software utility is under continuous update to enhance audio applications. Hence, the program screens shown here in this section may be slightly different from the latest software utility and shall be held for reference only.*

3. Click **Next** to install the Realtek High Definition Audio Driver.

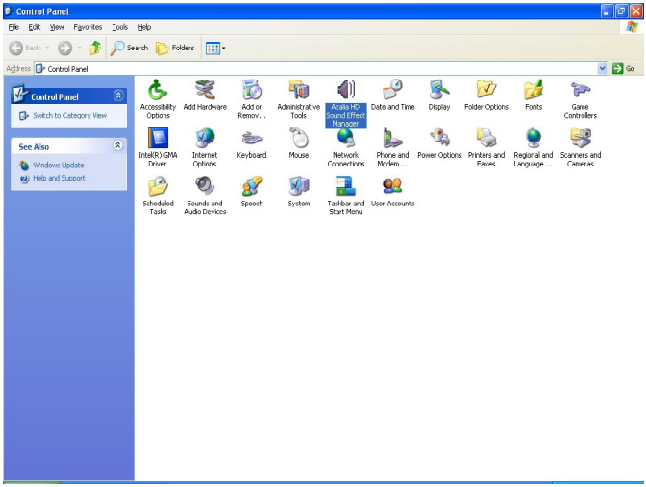

Realtek High Definition Audio Driver Setup (1.73)
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield® Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
< Back
Next >
Cancel
Click here

4. Click **Finish** to restart the system.


Realtek High Definition Audio Driver Setup (1.73)
Maintenance Complete
InstallShield Wizard has finished performing maintenance operations on Realtek High Definition Audio Driver.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel
Select this option
Click here

Software Configuration

After installing the audio driver, you are able to use the 2-, 4-, 6- or 8- channel audio feature now. Click the audio icon from the system tray at the lower-right corner of the screen to activate the **HD Audio Configuration**. It is also available to enable the audio driver by clicking the **Realtek HD Audio Manager** from the **Control Panel**.



Sound Effect

Here you can select a sound effect you like from the **Environment** list.

Environment Simulation

You will be able to enjoy different sound experience by pulling down the arrow, totally 23 kinds of sound effect will be shown for selection. Realtek HD Audio Sound Manager also provides five popular settings “Stone Corridor”, “Bathroom”, “Sewer pipe”, “Arena” and “Audio Corridor” for quick enjoyment.

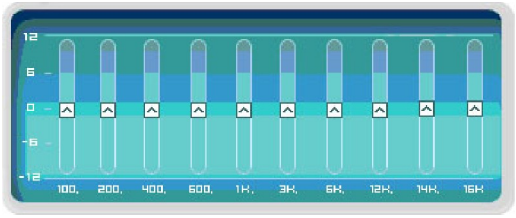
You may choose the provided sound effects, and the equalizer will adjust automatically. If you like, you may also load an equalizer setting or make an new equalizer setting to save as an new one by using the “**Load EQ Setting**” and “**Save Preset**” button, click “**Reset EQ Setting**” button to use the default value, or click “**Delete EQ Setting**” button to remove a preset EQ setting.

There are also other pre-set equalizer models for you to choose by clicking “**Others**” under the **Equalizer** part.

Equalizer Selection

Equalizer frees users from default settings; users may create their owned preferred settings by utilizing this tool.

10 bands of equalizer, ranging from 100Hz to 16KHz.



Save
The settings are saved permanently for future use

Reset
10 bands of equalizer would go back to the default setting

Enable / Disable
To disable, you can temporarily stop the sound effect without losing the settings

Load
Whenever you would like to use preload settings, simply click this, the whole list will be shown for your selection.

Delete
To delete the pre-saved settings which are created from previous steps.

Frequently Used Equalizer Setting

Realtek recognizes the needs that you might have. By leveraging our long experience at audio field, Realtek HD Audio Sound Manager provides you certain optimized equalizer settings that are frequently used for your quick enjoyment.

[How to Use It]

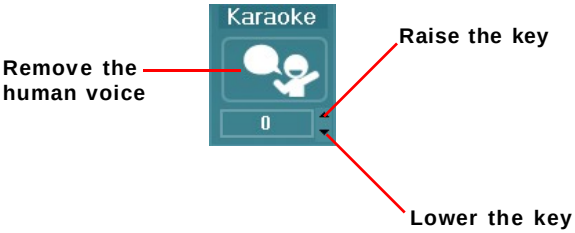
Other than the buttons “Pop” “Live” “Club” & “Rock” shown on the page, to pull down the arrow in “Others”, you will find more optimized settings available to you.

Karaoke Mode

Karaoke mode brings Karaoke fun back home. Simply using the music you usually play, Karaoke mode can help you eliminate the vocal of the song or adjust the key to accommodate your range.

1.Vocal Cancellation: Single click on “Voice Cancellation”, the vocal of the song would be eliminated, while the background music is still in place, and you can be that singer!

2.Key Adjustment: Using “Up / Down Arrow” to find a key which better fits your vocal range.



Mixer

In the **Mixer** part, you may adjust the volumes of the rear and front panels individually.

1. Adjust Volume

You can adjust the volume of the speakers that you pluged in front or rear panel by select the **Realtek HD Audio rear output** or **Realtek HD Audio front output** items.

Important

*Before set up, please make sure the playback devices are well plugged in the jacks on the rear or front panel. The **Realtek HD Audio front output** item will appear after you pluging the speakers into the jacks on the front panel.*

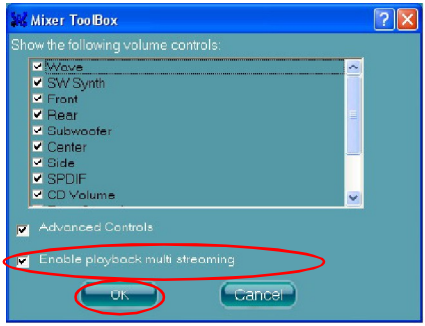
2. Multi-Stream Function

ALC883 supports an outstanding feature called Multi-Stream, which means you may play different audio sources simultaneously and let them output respectively from the indicated real panel or front panel. This feature is very helpful when 2 people are using the same computer together for different purposes.

Click the button and the Mixer **ToolBox** menu will appear. Then check the **Enable playback multi-streaming** and click **OK** to save the setup.

Important

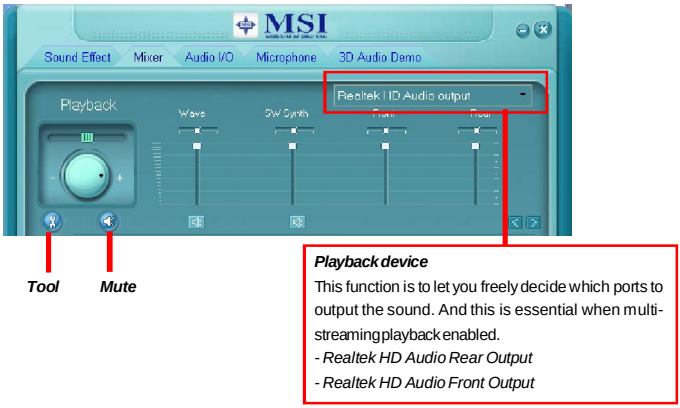
*If you use **AC97 front panel**, the device have to be plugged into the jacks on the panel before enable the multi-stream function.*



When you are playing the first audio source (for example: use Windows Media Player to play DVD/VCD), the output will be played from the rear panel, which is the default setting.

Then you **must** to select the **Realtek HD Audio front output** from the scroll list **first**, and use a different program to play the second audio source (for example: use Winamp to play MP3 files). You will find that the second audio source (MP3 music) will come out from the Line-Out audio jack of Front Panel.

3. Playback control



Mute

You may choose to mute single or multiple volume controls or to completely mute sound output.

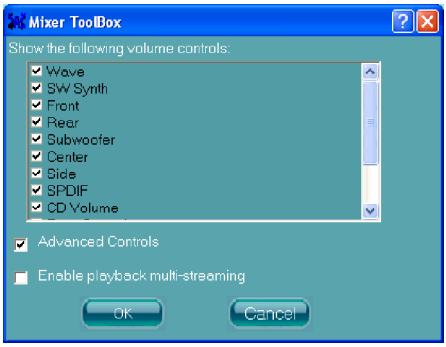
Tool

- Show the following volume controls

This is to let you freely decide which volume control items to be displayed.

- Advanced controls
- Enable playback multi-streaming

With this function, you will be able to have an audio chat with your friends via headphone (stream 1 from front panel) while still have music (stream 2 from back panel) in play. At any given period, you can have maximum 2 streams operating simultaneously.



4. Recording control

Mute

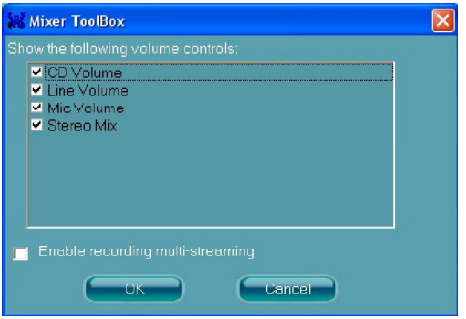
You may choose to mute single or multiple volume controls or to completely mute sound input.

Tool

- Show the following volume controls

This is to let you freely decide which volume control items to be displayed.

- Enable recording multi-streaming



Important

ALC883 allows you to record the CD, Line, Mic and Stereo Mix channels simultaneously, frees you from mixing efforts. At any given period, you may choose 1 of the following 4 channels to record.

Audio I/O

In this tab, you can easily configure your multi-channel audio function and speakers. You can choose a desired multi-channel operation here.

a. **Headphone** for the common headphone
b. **2CH Speaker** for Stereo-Speaker Output
c. **4CH Speaker** for 4-Speaker Output
d. **6CH Speaker** for 5.1-Speaker Output
e. **8CH Speaker** for 7.1-Speaker Output

Speaker Configuration:

1. Plug the speakers in the corresponding jack.

2. Dialogue “connected device” will pop up for your selection. Please select the device you have plugged in.
   - If the device is being plugged into the correct jack, you will be able to find the icon beside the jack changed to the one that is same as your device.
   - If not correct, Realtek HD Audio Manager will guide you to plug the device into the correct jack.

Connector Settings

Click to access connector settings.

Connector Settings
Connector Settings
Disable front panel jack detection
Mute rear panel output when front headphone plugged in.
Enable auto popup dialog, when device has been plugged in
OK
Cancel

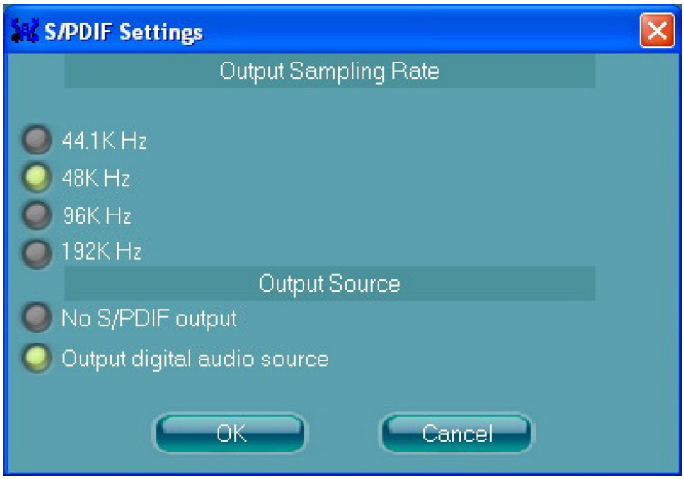
Disable front panel jack detection (option)
Find no function on front panel jacks? Please check if front jacks on your system are so-called AC'97 jacks. If so, please check this item to disable front panel jack detection.

Mute rear panel output when front headphone plugged in.

Enable auto popup dialogue, when device has been plugged in
Once this item checked, the dialog "Connected device" would not automatically pop up when device plugged in.

S/PDIF

Short for Sony/Philips Digital Interface, a standard audio file transfer format. S/PDIF allows the transfer of digital audio signals from one device to another without having to be converted first to an analog format. Maintaining the viability of a digital signal prevents the quality of the signal from degrading when it is converted to analog.



Output Sampling Rate

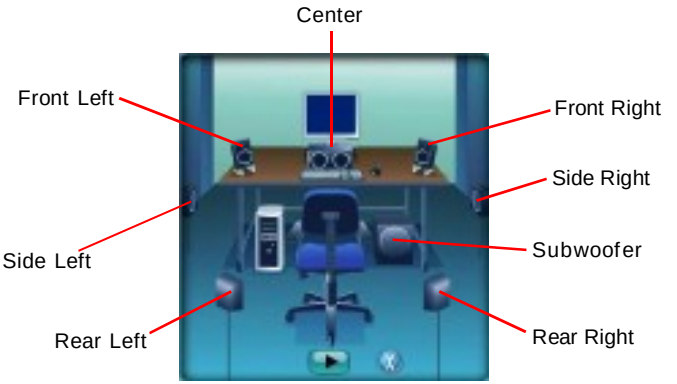
44.1KHz: This is recommend while playing CD.
48KHz: This is recommended while playing DVD or Dolby.
96KHz: This is recommended while playing DVD-Audio.
192KHz: This is recommended while playing High quality Audio.

Output Source

Output digital audio source: The digital audio format (such as .wav, .mp3,.midi etc) will come out through S/PDIF-Out.
S/PDIF-in to S/PDIF -out pass though mode: The data from S/PDIF-In can be real-time played from S/PDIF-Out.

Test Speakers

You can select the speaker by clicking it to test its functionality. The one you select will light up and make testing sound. If any speaker fails to make sound, then check whether the cable is inserted firmly to the connector or replace the bad speakers with good ones. Or you may click the **auto test** button to test the sounds of each speaker automatically.



Microphone

In this tab you may set the function of the microphone. Select the **Noise Suppression** to remove the possible noise during recording, or select **Acoustic Echo Cancelltion** to cancel the acoustic echo druing recording.

Acoustic Echo Cancelltion prevents playback sound from being recorded by microphone together with your sound. For example, you might have chance to use VOIP function through Internet with your friends. The voice of your friend will come out from speakers (playback). However, the voice of your friend might also be recorded into your microphone then go back to your friend through Internet. In that case, your friend will hear his/her own voice again. With AEC(Acoustic Echo Cancellation) enabled at your side, your friend can enjoy the benefit with less echo.

3D Audio Demo

In this tab you may adjust your 3D positional audio before playing 3D audio applications like gaming. You may also select different environment to choose the most suitable environment you like.

Information

In this tab it provides some information about this HD Audio Configuration utility, including Audio Driver Version, DirectX Version, Audio Controller & Audio Codec. You may also select the language of this utility by choosing from the **Language** list.

Also there is a selection **Show icon in system tray**. Switch it on and an icon will show in the system tray. Right-click on the icon and the **Audio Accessories** dialogue box will appear which provides several multimedia features for you to take advantage of.

Hardware Setup

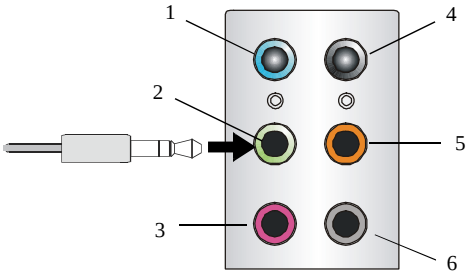
Connecting the Speakers

When you have set the Multi-Channel Audio Function mode properly in the software utility, connect your speakers to the correct phone jacks in accordance with the setting in software utility.

n 2-Channel Mode for Stereo-Speaker Output

Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.

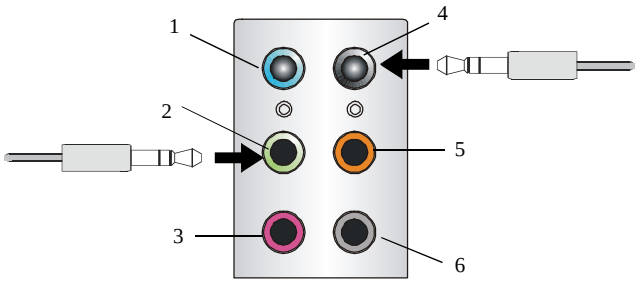
Back Panel



1 Line In
2 Line Out *(Front channels)*
3 MIC
4 Line Out *(Rear channels, but no functioning in this mode)*
5 Line Out *(Center and Subwoofer channel, but no functioning in this mode)*
6 Line Out *(Side Surround channels, but no functioning in this mode)*

n 4-Channel Mode for 4-Speaker Output

Back Panel



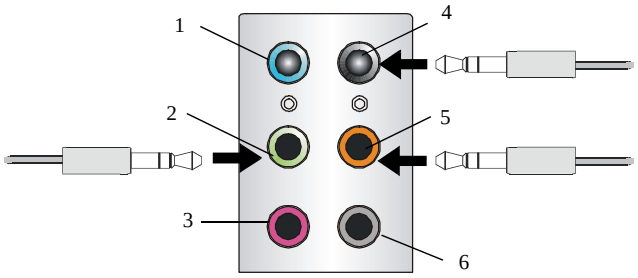
Description:
Connect two speakers to back panel's Line Out connector and two speakers to the real-channel Line Out connector.

4-Channel Analog Audio Output

1. Line In
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels)*
5. Line Out *(Center and Subwoofer channel, but no functioning in this mode)*
6. Line Out *(Side Surround channels, but no functioning in this mode)*

n 6-Channel Mode for 6-Speaker Output

Back Panel

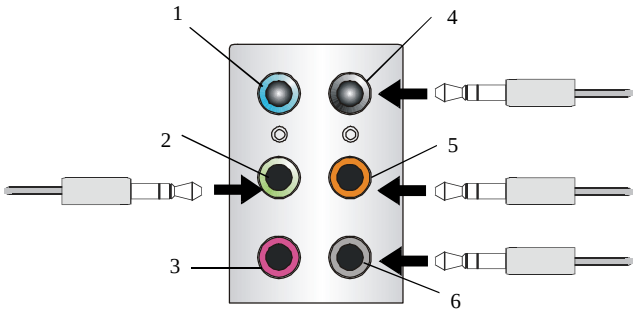


Description:
Connect two speakers to back panel's Line Out connector, two speakers to the rear-channel Line out connector and two speakers to the center/ subwoofer-channel Line Out connector.

6-Channel Analog Audio Output

1. Line In
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels)*
5. Line Out *(Center and Subwoofer channel)*
6. Line Out *(Side Surround channels, but no functioning in this mode)*

n 8-Channel Mode for 8-Speaker Output



Description:
Connect two speakers to back panel's Line Out connector, two speakers to the rear-channel Line out connector, two speakers to the center/subwoofer-channel Line Out connector and two speakers to the side-channel Line Out connector.

8-Channel Analog Audio Output

1. Line In
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels)*
5. Line Out *(Center and Subwoofer channel)*
6. Line Out *(Side Surround channels)*

Appendix B
JMicron RAID Introduction

JMicron's RAID provides Serial ATA RAID 0 (Striping) , RAID 1 (Mirroring) and JBOD functionality to enhance the industry's leading PCI Express-to-SATAII & PATA host controller products. Two major challenges facing the storage industry today are (1): keeping pace with the increasing performance demands of computer systems by improving disk I/O throughput, and (2): providing data accessibility in the face of hard disk failures while utilizing full disk capacity.
JMicron PCI Express-to-SATAII/ PATA provide 1 SATAII port and 1 PATA port with RAID to slove both of these problems.

Important

All the information/pictures illustrations in this chapter might differ from the listed in your system.

MSI
MICRO-STAR INTERNATIONAL

Introduction

RAID - Redundant Array of Independent Disks

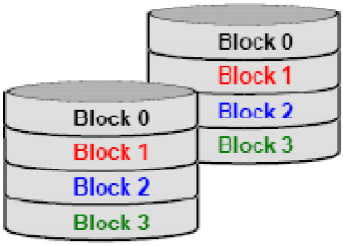
RAID technology manages multiple disk drives to enhance I/O performance and provide redundancy in order to withstand the failure of any individual member, without loss of data. RAID provides two RAID Set types, Striping (RAID 0) and Mirroring (RAID 1).

RAID 0 (Striping)

Striping is a performance-oriented, non-redundant data mapping technique. While Striping is discussed as a RAID Set type, it actually does not provide fault tolerance. Striping arrays use multiple disks to form a larger virtual disk.

RAID 1 (Mirroring)

Disk mirroring creates an identical twin for a selected disk by having the data simultaneously written to two disks. This redundancy provides instantaneous protection from a single disk failure. If a read failure occurs on one drive, the system reads the data from the other drive.



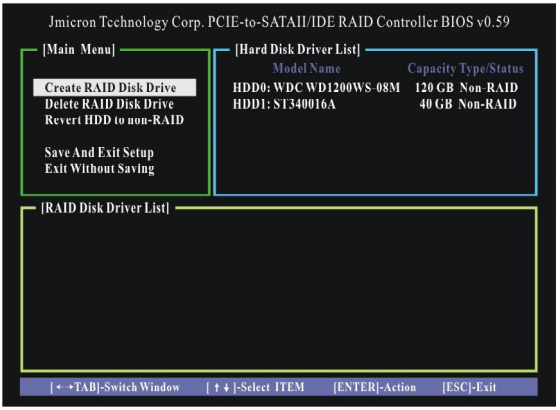
JBOD (Concatenate)

JBOD provides a method for combining drives of different sizes into one large disk

Creating and Deleting RAID sets with BIOS Utility

Be sure to set **RAID** mode for the ***Onboard JMB361 Mode*** of **Integrated Peripherals** in BIOS before configuring the JMicron BIOS utility. After that press F10 to save the configuration and exit. During boot up (POST), press CTRL+J to enter the JMicorn BIOS RAID utility.

The RAID Utility menu screen will be displayed. A brief description of each section is presented below.



Main Menu

The Main Menu in the upper left corner is used to choose the operation to be performed. The selections are:
Create RAID set - is used to create a new legacy RAID set.
Delete RAID set - is used to delete a legacy RAID set.
Revert HDD to non-RAID - is used to revert an existed-RAID HDD to non-RAID.
Save And Exit Setup - save all settings and exit the BIOS utility.
Exit Without Saving - exit the BIOS utiltiy without any saving.

Hard Disk Driver List

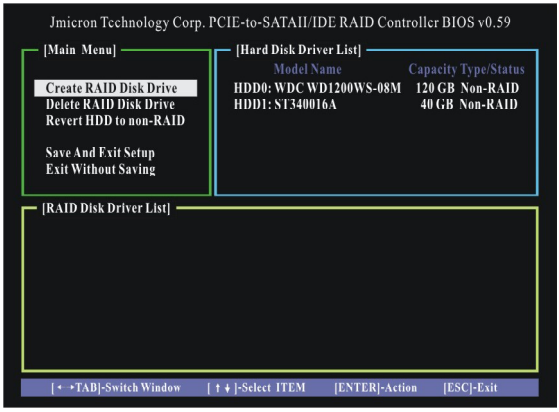
The menu shows the model number and capacities of the drives physically attached to the SATAII & PATA ports.

RAID Disk Driver List

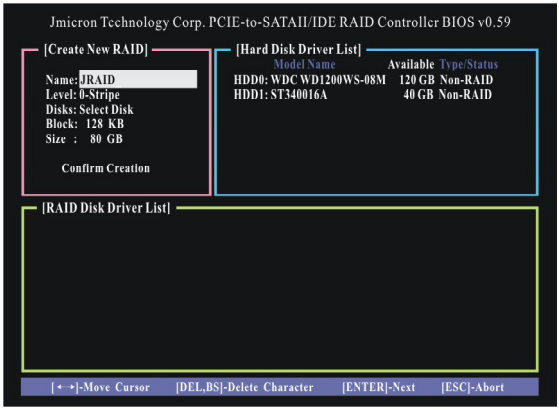
The menu shows the current configuration of RAID set.

Creating RAID set

1. Select “Create RAID Disk Drive”. Then press <Enter>.

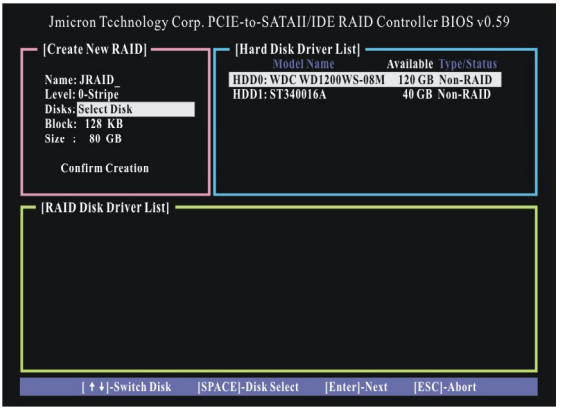


2. Then in the **Name** field, specify a RAID set name and then press the <Enter> to go to the next field.

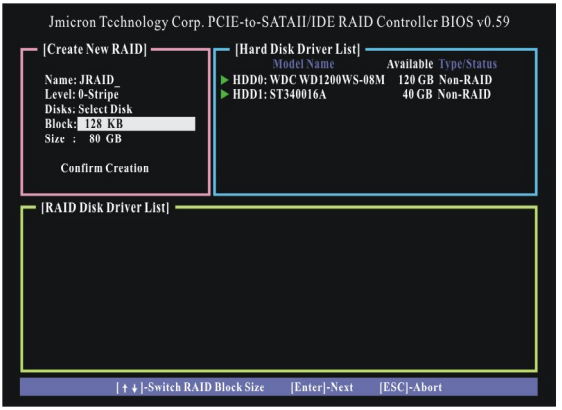


3. Choose a 0-Striped, a 1-Mirror, or a JBOD-Concatenate combination set and then press <Enter> to go to the next step.

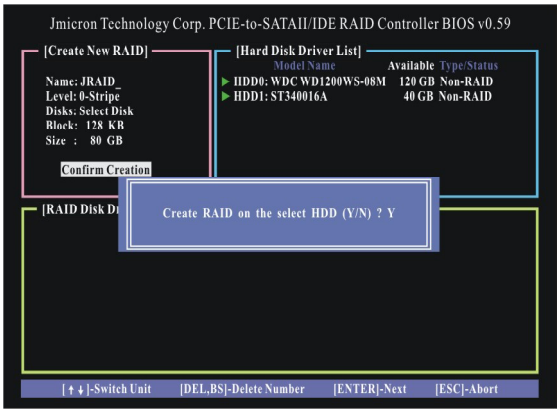
4. In the **Hard Disk Disk List** menu, use <Space> key to select the disks you want to create for the RAID set, then click <Enter> key to finish selection.


Jmicron Technology Corp. PCIE-to-SATAII/IDE RAID Controller BIOS v0.59
[Create New RAID]
Name: JRAID_
Level: 0-Stripe
Disks: Select Disk
Block: 128 KB
Size : 80 GB
Confirm Creation
[Hard Disk Driver List]
Model Name Available Type/Status
HDD0: WDC WD1200WS-08M 120 GB Non-RAID
HDD1: ST340016A 40 GB Non-RAID
[RAID Disk Driver List]
[↑↓]-Switch Disk [SPACE]-Disk Select [Enter]-Next [ESC]-Abort

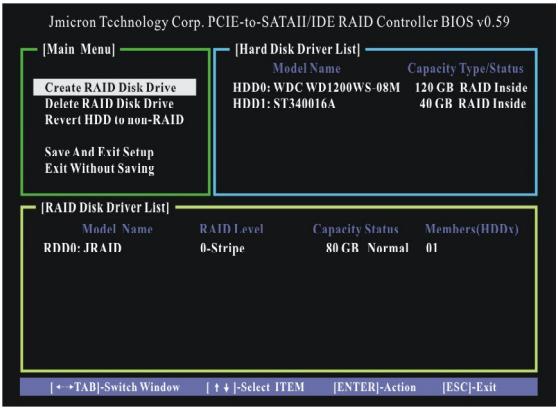
5. Then select the strip value for the RAID array by using the “upper arrow” or “down arrow” keys to scroll through the available values, and pressing the <Enter> key to select and advance to the next field. The available values range from 4KB to 128 KB. The default and typical value for RAID 0 is 128KB. (This field only available for RAID 0 mode.)


Jmicron Technology Corp. PCIE-to-SATAII/IDE RAID Controller BIOS v0.59
[Create New RAID]
Name: JRAID_
Level: 0-Stripe
Disks: Select Disk
Block: 128 KB
Size : 80 GB
Confirm Creation
[Hard Disk Driver List]
Model Name Available Type/Status
HDD0: WDC WD1200WS-08M 120 GB Non-RAID
HDD1: ST340016A 40 GB Non-RAID
[RAID Disk Driver List]
[↑↓]-Switch RAID Block Size [Enter]-Next [ESC]-Abort

6. Then select the capacity of the RAID set in the **Size** field. The default value is the maximum capacity of the selected disks. Then press <Enter> to the Confirm Creation field.
7. The Creation field will display a message to ask you to confirm the creation. Then press <Y> key to proceed with the RAID set creation.



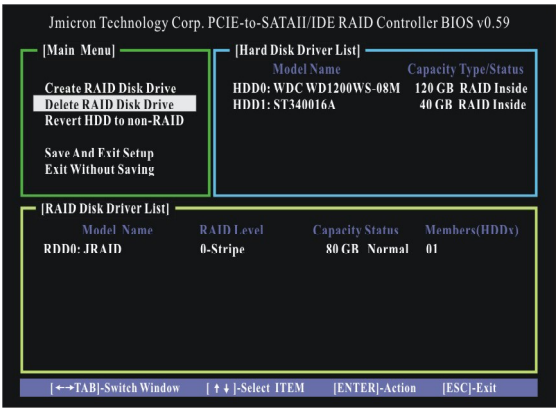
8. Then the following screen appears to indicate that the creation is finished.



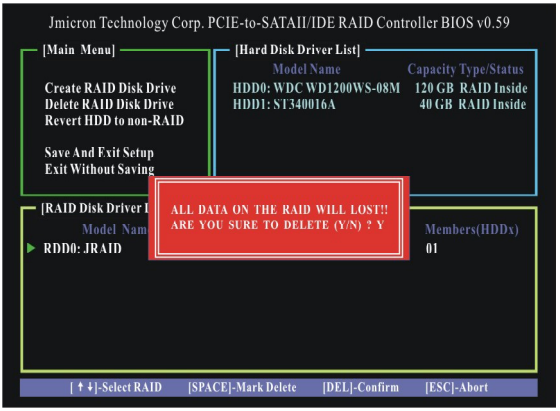
9. Go to the Save And Exit Setup field and press <Enter>, a message will display to ask you to confirm the setup. Then press <Y> key to save the setting and exit the BIOS utility.

Deleting RAID set

1. Select “Delete RAID Disk Drive”. Then press <Enter>.

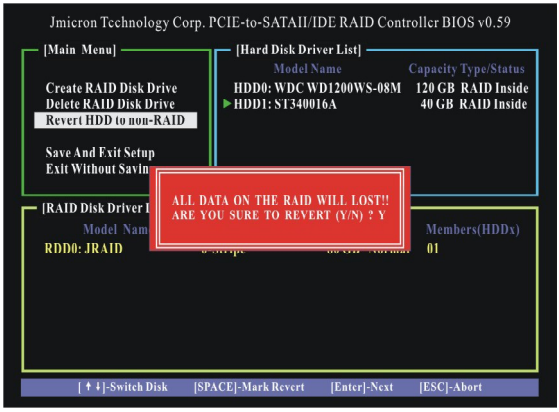


2. In the RAID Disk Driver List menu, use <Space> key to select the RAID set you want to delete. Then press <Del> key.
3. Press “Y” to accept the deletion when a deletion message is appeared.



Revert HDD to non-RAID

Select **Revert HDD to non-RAID** and press <Enter>. In the Hard Disk Driver List menu use <Space> key to select the disks you want to revert then click <Enter> key. The following screen appears, press <Y> key to remove any RAID structures from the drives.



Important

1. *You will lose all data on the RAID drives and any internal RAID structures when you perform this operation.*
2. *Possible reasons to 'Revert HDD to non-RAID' could include issues such as incompatible RAID configurations or a failed volume or failed disk.*

Installing the RAID Driver (For bootable RAID array)

Install Driver in Windows XP / 2000

† **New Windows XP / 2000 Installation**

The following details the installation of the drivers while installing Windows XP / 2000.

1. Start the installation:
   Boot from the CD-ROM. Press F6 when the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the Windows XP/2000 Setup window is generated, press <S> key to specify an Additional Device(s).
3. Insert the driver diskette ***JMicron RAID Driver For Win2K/XP*** driver into drive A: and press <Enter>.

Important

The Silicon Image JMicron RAID Driver Installation Disk should be accompanied in the mainboard package. You may make the Serial ATA RAID driver by yourself by following the instruction below.

1. *Insert the MSI CD into the CD-ROM drive.*
2. *Click the "Browse CD" botton on the Setup Screen.*
3. *Copy all the contents in the* ***\\IDE \ JMicron \ Floppy*** *to a formatted floppy disk.*
4. *The driver disk for* ***JMicron RAID Controller*** *is done.*

4. Choose the driver ***JMicron RAID Controller*** that appears on Windows XP/2000 Setup screen, and press the <Enter> key.
5. Press <Enter> to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, press <Enter> to continue with installation.
6. From the Windows XP/2000 Setup screen, press the <Enter> key. Setup will now load all device files and then continue the Windows XP/2000 installation.

† **Installing OS on RAID Drive**

1. After setup examines your disks, it will copy files to Windows installation folders and restart the system.
2. The setup program will continue and finish the installation after restarting.
3. Wait until Windows XP/2000 finishes installing devices, regional settings, networking settings, components, and final set of tasks, then reboot the system if necessary.

† **Confirming Windows XP/2000 Driver Installation**

1. From Windows XP/2000, open the **Control Panel** from **My Computer** followed by the System icon.
2. Choose the **Hardware** tab, then click the **Device Manager** tab.
3. Click the "**+**" in front of the **SCSI and RAID Controllers** hardware type. The driver should appear.

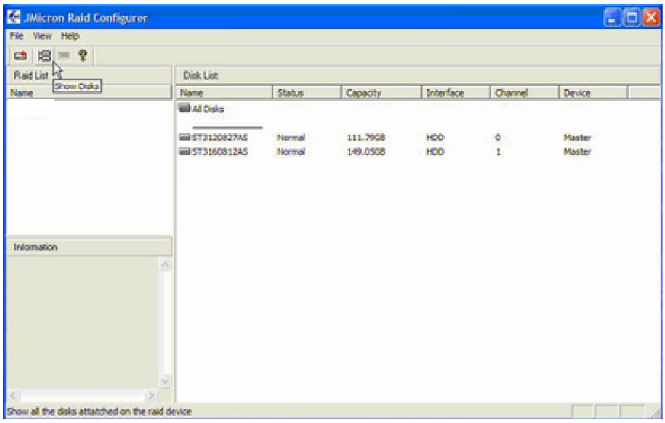
JMicron Raid Configurer

There is an application called JMicron Raid Configurer which helps you perform the following tasks of nVDIA RAID.

- **Viewing RAID Array Configurations**
  View an array configuration (mirrored, striped)
- **Creating RAID Arrays**
- **Deleting a RAID Array**

Viewing RAID Array Configurations

To view your RAID configuration from Windows, launch the JMicron Raid Configurer utility by clicking =>Programs => JMicron Technology Corp => JMRaid Tool.
Left-click the “Show Disks” button and the information of all hard disks will display on the right side of the window.

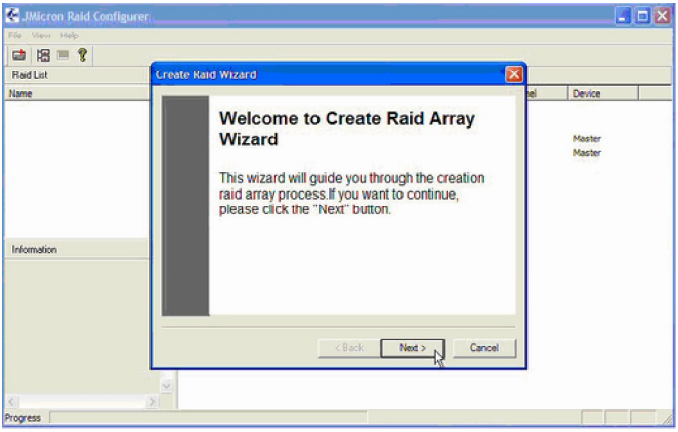


Important

The information in the figures in this part may very from what it is shown in your system.

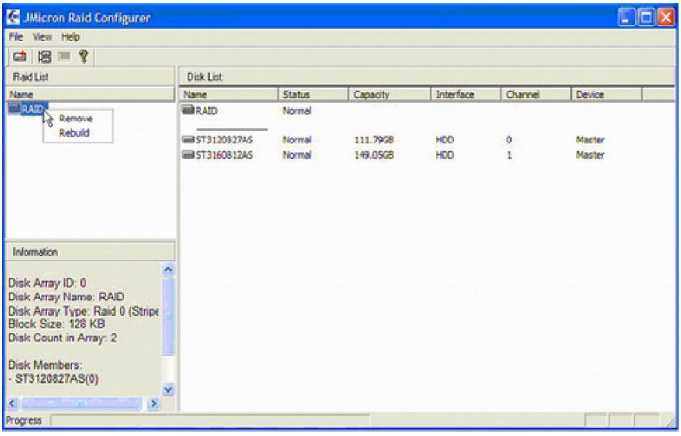
Creating RAID

JMRaidTool supports the creation of RAID 0 and 1.
1. Left-click the “New Disk Array” button.
2. A wizard dialogue will display on the screen, following the description of every step to complete the creation.



Deleting RAID

1. Right-click the name of the disk array you want to delete and the “Remove” menu will appear.



2. A warning message appears to remind you that the data will be lost. Press the “Yes” button if you really want to delete the disk array.